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Command and Control in Operations Other Than War: A New Framework

by

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Captain, United States Marine Corps
B.S., United States Naval Academy, 1987

Submitted in partial fulfillment
of the requirements for the degrees of

MASTER OF SCIENCE IN SYSTEMS TECHNOLOGY
(Command, Control and Communications)
and
MASTER OF SCIENCE IN NATIONAL SECURITY AFFAIRS

from the

NAVAL POSTGRADUATE SCHOOL
June 1994

Department of National Security Affairs

REPORT DOCUMENTATION PAGE

Form Approved OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington DC 20503.

1. AGENCY USE ONLY *(Leave blank)*	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	*16 June, 1994	Master's Thesis

4. TITLE AND SUBTITLE *COMMAND AND CONTROL IN OPERATIONS OTHER THAN WAR: A NEW FRAMEWORK	5. FUNDING NUMBERS
6. AUTHOR(S) Ty A. Schieber	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey CA 93943-5000	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.

12a. DISTRIBUTION/AVAILABILITY STATEMENT	12b. DISTRIBUTION CODE
Approved for public release; distribution is unlimited.	*A

13. ABSTRACT *(maximum 200 words)*

The author presents a new framework for approaching command and control in operations other than war (OOTW). Currently, no common doctrine exists, between potential coalition partners to guide the command and control process in this particular environment. As a consequence, coalitions are formed ad-hoc,which has potential consequences for the adequacy of the resulting command and control process and system, and commensurately, for the speed and impact a coalition may have in a target environment. The author examines current US perceptions concerning command and control, intelligence, and communications, and the conceptual adjustments required for US forces involved in the irregular environment.. Challenges and lessons learned from recent OOTW are then discussed in order to identify, to the degree possible, the specific impediments to optimum coalition command and control. Conclusions stress that a common and standardized approach is required to blend the political agendas, capabilities, and limitations of a diverse coalition into an efficient and effective entity. To accomplish this, the approach must include a methodical and iterative process which logically, chronologically, and holistically frames and links the problem at hand, the resources arrayed to address the problem, and the functions that comprise the problem solving process, in a manner appropriate to existing conditions at any particular time. The COordination, COoperation, and COnsensus (CO^3) Loop presented in this thesis makes an initial effort at providing the common approach required.

14. SUBJECT TERMS *Command and control, intelligence, communications, operations other than war, coalition, command and control architecture	15. NUMBER OF PAGES 203
	16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	UL

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I. INTRODUCTION

A. PURPOSE

The purpose of this thesis is to present a useful framework for approaching command and control (C^2) and its inextricable elements, intelligence and communications, in operations other than war (OOTW).

Currently, no common doctrine exists between potential coalition partners to guide the command and control process in this environment. As a consequence, coalitions are formed ad-hoc, which has potential consequences for the adequacy of the resulting command and control process and system, and commensurately, for the speed and impact a coalition may have in a target environment.

The framework presented is called the COordination, COoperation, and COnsensus (CO^3) Loop, and is a standardized, concept oriented, decision and capability based methodology that provides a more holistic approach to the conceptual, environmental, and architectural aspects of C^2 in OOTW.

B. METHODOLOGY

The author first provides a discussion of the nature and origins of US perceptions concerning C^2, intelligence, and communications. Then, the nature of OOTW and how it impacts traditional US command and control perceptions is examined. Subsequently, challenges and lessons learned from recent OOTW are discussed in order to identify, more specifically, the impediments in achieving optimal coalition command and control. Finally, the new framework is

introduced, which provides an initial attempt at addressing the identified impediments and lessons learned.

A major issue the new framework, and the thesis, will address is the notion of command and control as a problem solving process. Although individual coalition members may have a distinct command and control process as a result of their respective role in the coalition, the coalition must share a problem solving methodology to ensure that individual C2 processes are synergistically positioned in the environment. This requires a methodical, holistic, and iterative process, as is developed in the framework presented in this thesis.

Many, but not all, of the challenges, examples, and lessons learned presented in this thesis are drawn from three recent OOTW: OPERATION SEA ANGEL (disaster relief to typhoon victims in Bangladesh 11 May-13 June, 1991), OPERATION PROVIDE COMFORT (Kurdish relief operations, Northern Iraq, April- June 1991), and ongoing efforts in Somalia, including OPERATION RESTORE HOPE and OPERATION CONTINUE HOPE, (December 1992-present). These operations involve dramatically different circumstances and threat levels, and hopefully offer a representative sample of what coalitions will face in future OOTW. This thesis, however, is not a case study, per se. The details of these operations are widely chronicled in other works. A brief synopsis of the state of affairs surrounding each operation, however, is provided in Appendix A.

The research for this thesis involved several sources. Personal interviews with individuals involved in the aforementioned operations, including one of the JTF commanders, were especially useful. Further interviews with principle staff members from the staffs of US Commander in Chief Pacific, and Commander Marine Forces Pacific provided the author with a great deal of information concerning current initiatives geared towards improving C3I in the general sense. Other supporting material was drawn from after action reports and

"lessons learned" submissions from respective operations, documentation from appropriate training and doctrine commands, and other available books, reports, and periodicals. The author's attendance at a conference at the Naval War College concerning United Nations involvement in OOTW also helped lend a more internationally balanced perspective

C. SCOPE

This thesis is written **for** the JTF commander, **about** command and control, intelligence, and communications in operations other than war, and **from** an operational perspective. The emphasis in this thesis rests with identifying the key factors that currently impact the ability of the US military and other coalition forces in providing optimal command and control in the OOTW environment, and developing conclusions germane to recommending an alternative and improved approach.

Despite the operational focus, there is significant, albeit inadvertent, overlap into institutional, strategic, and tactical territory. Additionally, many other considerations involving such functional areas as logistics, operations, and administration are vital to compiling an exhaustive list of factors involved in OOTW. While considerable overlap between these additional areas and command and control may exist in reality and in this thesis, they are not specifically addressed.

Additionally, one should not automatically discount the relevance of this study to missions outside the realm of OOTW. Although there are differences, many operational concepts and practices appropriate for combined arms and conventional types of roles remain relevant in OOTW. Accordingly, the conceptual framework and functional decomposition may have utility in other types of operations.

D. BACKGROUND

1. The Changing World

The boundaries that formerly provided focus for US defense planning no longer exist. Predicating US military force structure, equipment, and training on the Cold War and anticipated large scale, world wide confrontation with the Soviet Union is no longer valid. The US no longer has a dependable, predictable opponent against whom to focus strategy.

What is clear, however, is that external US security challenges have changed and that the world is even more unpredictable and perilous than ever. The regional "de-polarization" resultant from communism's collapse has triggered a worldwide resurgence of ethnic, religious, and political upheaval. Many countries do not share the same internal stability as the US The downfall of communism has left many large countries in pieces. The commensurate leadership vacuum has left the "pieces" unchecked in their quest for legitimacy, resources, revenge, etc.. State impotence and flux within the disintegrating states and associated "fragment nations" is certain to perpetuate conditions under which neighboring countries or enclaves will clash (as is occurring in the former Yugoslavia), and non-traditional types of conflict will flourish. Religious fundamentalism may also play heavily into this equation.

Furthermore, third world instability is likely to continue for several reasons. Former superpowers and other first world nations are likely to devote less and less attention to third world problems, especially as resources needed to rectify more pressing internal and external problems remain scarce. The existing economic and social conditions that exist in many third world nations, such as high debt load, scarce resources, over population, disease, lack of food, poverty, and disparate of wealth will continue to foster a tumultuous environment.

Additionally, most of these benefits of the technological revolution are currently limited to first world nations. The disparity in standard of living will widen if this trend is not reversed and the technological infrastructure of third world nations improved. Compound these factors with a host of other disasters, both natural and man-made, and the ominous consequences for the human condition in many parts of the world are evident.

2. Why is it necessary to consider OOTW?

a) Continued US Involvement Likely

Operations short of war, peace operations, irregular operations, operations other than war, or by whatever alternative alias the operations of interest in this thesis are referred, are an increasingly important and prevalent part of US foreign and defense policy.

The prevailing environment and a lack of resources to address these problems suggest that the era of uncertainty, instability, and tumult is likely to continue, with corresponding ramifications for the need for some form of response. Accordingly, US military forces can anticipate continued involvement in situations that fall outside the realm of "traditional" charters. Whether engaging in peacekeeping or peace enforcement operations in Somalia, or providing humanitarian relief to hurricane ravaged South Florida, the US military will necessarily maintain its adopted, "chameleon like" character to accomplish the myriad of assigned roles in these operations- operations other than war (OOTW).

Many argue that US military participation in operations such as peacekeeping, peace enforcement, or foreign humanitarian assistance is inappropriate. Reasons for this position include fear of degrading conventional capability as well as concern that the United States should expend its ever-decreasing defense resources to pursue **only** those interests vital to its national

security. Although the exact implications of employing US forces in OOTW are, at best unclear, the remainder of the argument requires serious scrutiny.

The concept of "national interest" is murky and does little to justify (or not justify) employment of US military force. Nations, including the United States, are increasingly aware that many problems and issues, such as the environment, refugees, and commerce, are "trans-national" and do not recognize sovereign boarders. The sheer number of nations and the corresponding intertwining of interests renders conflict resolution and achieving agreement and consensus between involved parties extremely difficult. Consequently, interpretation of US interest and subsequent actions aimed at achieving those interests are extremely situational and inconsistently applied. The lack of boundaries, includes, but is not limited to defense oriented concerns. Concurrent with the development of a New World Order are emerging concepts of state sovereignty, legitimacy, and collective action that have significant implications for the employment of military forces. [Ref. 1]

b) Precedent for Coalition Operations

OOTW will potentially remain a prominent role for US forces for the foreseeable future, which causes concern for various reasons. Recent history indicates a trend, as pertains to US military involvement in OOTW. The trend implies that, not only will the US participate in future OOTW, but also that when it participates, it will do so as part of a coalition.

Though not to imply that the US should (or does) seek "permission" from the world community for every, or any, policy decisions resulting in military deployment, recent operations have set a precedent has been set for obtaining international consensus versus taking unilateral action. The increase in the number of nation states has created a situation where specific "interests" are likely to overlap between nations. Accordingly, to maintain an appearance of legitimacy, many nations, including the US, more and more frequently seek

international consensus and support in many aspects of foreign policy, especially those that involve the use of the military. [Ref. 2:p.51] Additionally, many evolving nations are too weak to defend their interests alone. The advantages of collective cooperative arrangements are obvious, resulting in a corresponding increase in the amount of consensus, cooperation, and coordination (CO^3) between nations

c) The Role of Doctrine

> At the very heart of war lies doctrine. It represents the central beliefs for waging war in order to achieve victory. Doctrine is of the mind, a network of faith and knowledge reinforced by experience which lays the pattern for the utilization of men, equipment, and tactics. It is fundamental to sound judgment. [Ref. 3:p. I-1]

Currently, the doctrinal foundation from which OOTW are approached is, in the author's opinion, less than adequate. There is, to the author's knowledge, no common doctrine for OOTW. Current joint doctrine touches on some of the complexities involved in both OOTW and coalition warfare. Further, several "playbooks" and "help lists" were developed from the lessons learned during past irregular operations. Unfortunately, the author feels that these efforts are not adequate in addressing the differences between OOTW and conventional operations.

The doctrinal void means that future OOTW will be approached with doctrine developed largely for conventional operations. This approach is not all-together wrong, in the author's opinion, as many of the fundamental concepts that apply to conventional operations remain appropriate for OOTW. There are, however differences between OOTW and conventional operations. Some are subtle, some less so. These differences are enumerated in subsequent chapters of this thesis.

Certainly, lacking common doctrine, coalition forces are not wholly impotent. Through a combination of applying lessons learned in previous OOTW

and adapting accordingly and, in many cases, superhuman individual efforts, American forces continue to play pivotal roles in OOTW. One may consider US contribution to coalition accomplishments in the numerous OOTW subsequent to Desert Storm to draw conclusions as to the effectiveness of this approach. Unquestionably, forces of various compositions have achieved significant degrees of success in OOTW, but have been somewhat handicapped by the lack of common doctrine. They will continue to learn from their predecessors mistakes and make significant contributions towards improving the human condition in many clime and place.

Efforts at developing joint doctrine specifically oriented towards OOTW are underway, and subsequent coalitions have benefited significantly from the lessons learned in previous operations. However, until doctrine is developed, shared, and digested by all likely coalition participants, the approach taken in future OOTW will remain largely ad-hoc. This is, at best, a contentious path.

> The problem with ad hocracy, the only available method when a framework is absent, is that the individual determinations may form a set of defacto principles of operation, a new set of rules of the game that would not have been adopted through a conscious, deliberative process. The crisis and responses of the early post-cold war period suggest strongly this possibility unless clarifying discussions and deliberations occur. [Ref. 4:p. 2]

Although the focus of this thesis is not to measure the impact of doctrine in a particular type of operation, it is logical to assume that the standardized framework found in doctrine may, in some degree, enhance force effectiveness by alleviating the need to "reinvent the wheel" for every situation. Commensurately, lessons learned during these operations suggests that there exists considerable room for process improvement in many facets of these operations, as well as a need to establish a codified, standard set of procedures to guide forces in the conduct of these missions.

Doctrine is important for a number of reasons, but its true value in OOTW is in conveying how a force will embark upon its mission. The procedures and other "ground rules" established in common, shared doctrine, would reduce the mystery in how various parties approach OOTW. Participants, therefore, can think through potential problem areas before crisis develops. This enhances, not only the efficiency and effectiveness of the force, but also the rapidity and magnitude of the impact a given force may have in a particular situation.

Doctrine also provides participants with a guideline to which they can organize, train and equip appropriate forces. Hopefully, by examining the nature of OOTW and identifying potential and actual shortfalls, as pertains to C^2, a more appropriate approach will surface. It is towards this overarching objective that this thesis is focused.

E. ORGANIZATION OF THESIS

1. Chapter II. Command and Control Overview

Chapter II provides a broad examination of the origins, nature, objectives, and principles pertaining to US perceptions of command and control. Current military viewpoints, and the critical notion that C^2 is a problem solving process, which depends upon intelligence and communications, is presented.

2. Chapter III. Operations Other Than War

Chapter III illustrates the unique environment of operations other than war and its relationship to traditional US command and control precepts. The author discusses the adjustments required of the "US military mind" in order to more appropriately "navigate" the irregular operating environment.

3. Chapter IV. Command and Control Lessons Learned

Chapter IV provides a detailed discussion of specific challenges and impediments, including those experienced in recent OOTW, to effective coalition command and control.

4. Chapter V. Intelligence Lessons Learned

Chapter V presents a detailed discussion of the relationship between command and control and intelligence, as well as the institutional and doctrinal challenges as experienced in recent OOTW.

5. Chapter VI. Communications Lessons Learned

Chapter VI examines the challenges coalitions face in ensuring that critical and adequate communications are achieved between coalition entities. Again, current doctrinal shortfalls and historical examples provide a basis for this discussion.

6. Chapter VII. A New Framework

Based upon the identified challenges and impediments in coalition command and control, as well as intelligence and communications, Chapter VII presents a standardized methodology which structures a coalition's approach to command and control in a manner that adequately addresses the identified shortcomings.

II. COMMAND AND CONTROL OVERVIEW

A. INTRODUCTION

A critical analysis of command and control requires an understanding of the status quo. The purpose of this chapter is to establish a foundation for the command and control concept and to expand understanding of the command and control process in the context of military operations. Towards this end, the author will present a representative baseline of current thought on how C2, as well as intelligence and communications, are viewed with respect to US military operations. Furthermore, various thoughts on the structure of command and control and the respective activities involved are presented.

Command and control is the central issue in this thesis. Communications and intelligence are included in this analysis because, in the author's opinion, command and control can not exist without them. The C^2 paradigm that currently exists and the one that this thesis will establish require detailed discussion of these terms in the context of OOTW.

This chapter will reflect, to the extent possible, a commonly accepted, doctrinally codified perspective. The terms and concepts presented in this discussion focus primarily on the conceptual level, vice detailed technical implementation.

B. COMMAND AND CONTROL (C2)

1. Origins

The term "command and control" is among the most misused terms in the military vocabulary. First used in the 1950s in connection with the

automation of the US strategic air defense system, C2 has been poorly understood and subject to widely varying interpretations ever since. [Ref. 5:p. 3]

A full appreciation of the complexities involved with command and control requires a further discussion of its origins. C. Kenneth Allard, in his book *Command, Control, and the Common Defense,* suggests that one should view command and control as:

> ...the apex of a pyramid whose connected layers include in ascending order national values, operational environments, strategic paradigms, service organizational norms, technological choices, patterns of inter

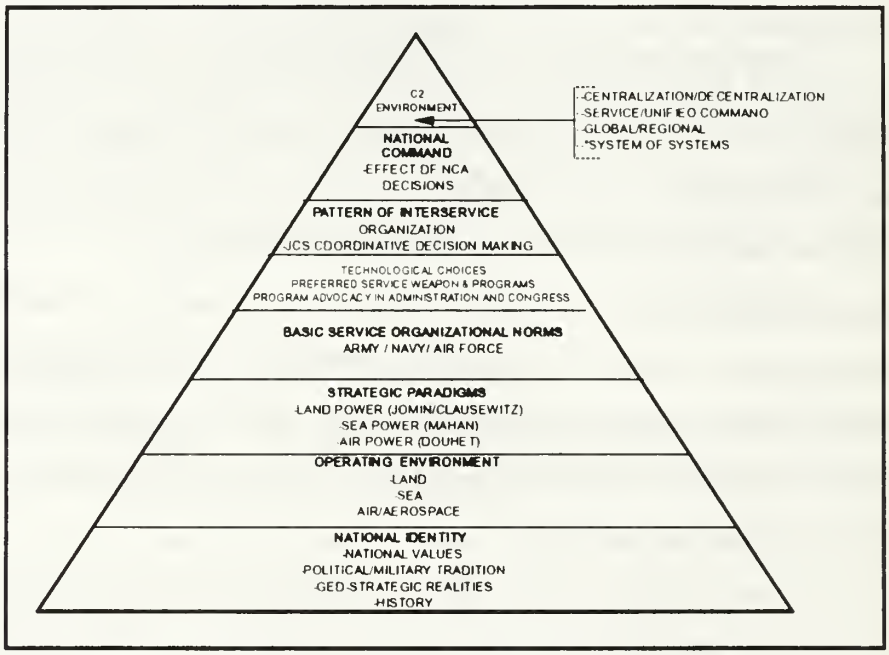

Figure 1. C. Kenneth Allard's Key Determinants of Command and Control

> service organization, national command, and finally, the command and control environment itself. [Ref. 6:p. 241]

Graphically represented in Figure 1, this pyramid capsulizes the historical and evolutionary foundation upon which US command and control is predicated. Each level in the pyramid involves issues and concerns that are well documented in the existing body of literature, and are beyond the scope of this thesis. Current perceptions and difficulties related to the command and control of

US forces have roots primarily in the US military and governmental institutions which actually perform the commanding and controlling.

The pyramidal paradigm is useful in both developing a framework for understanding current perceptions, as well as analyzing command and control lessons learned in subsequent chapters.

Currently, the vocabulary associated with the study of command and control (C^2) is contentious. There are very few commonly agreed upon terms and interpretations. The derivative nomenclature associated and used synonomously with C^2, such as C^3, C^3I, and C^3I^2, further confuses the issue. Debate continues to this day concerning the appropriate "exponents" for the C^mI^n equation. Command and control as well as its derivative forms mean many different things to many different people. The vast number of brevities and the interchangeable but undifferentiated manner in which they are used is a major problem for the C^2 community.

> One of the least controversial things that can be said about command and control is that it's controversial, poorly understood, and subject to widely different interpretations. The term can mean almost everything from military computers to the art of generalship: whatever the user wishes it to mean. [Ref. 7:p. 23]

This blurred concept has far reaching ramifications in that it appears to have diverted much needed attention away from the fundamental C^2 process itself. The two most serious implications of this are a confusion within the C^2 community about the C^2 function and responsibility as well as a failure of the C^2 community to focus adequate attention on developing a useful and commonly understood command and control theory. [Ref. 5:p. 4]

2. Definition

A critical aspect of understanding the complexities of command and control lie in establishing a clear and concise definition of C^2 and its associated terminology.

JCS Pub 1-02 defines command and control as:

> The exercise of authority and direction of a properly designated commander over assigned forces in the accomplishment of a mission. Command and control functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures which are employed by a commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of the mission. [Ref. 8]

This definition, however, is far more simplistic than what actually transpires in practice. Command and control is the art and science of causing subordinates to employ combat capability in the optimum fashion to attain the command's mission. [Ref. 9:p. 1] Command and control is not viewed as simply an exercise in the dynamics of communications and electronics. Rather, it is a non technical process that occasionally relies on technology to accomplish its mission. Emphasis is on the human aspect of the process, not the technical.

Many go through great lengths to emphasize the distinction between command and control. The simplest method of defining any term is to examine each word separately. "Command" represents the legal authority vested in a military commander over subordinates, by virtue of rank or assignment. "Control" is typically associated with a commander's direction of forces. The JCS-sanctioned definition of "command and control" obviously goes well beyond the basic dictionary wordage. [Ref. 5:p. 4]

The JCS definition is also convenient in that it captures a number of distinct, but equally important, concepts in one definition:

- "The exercise of authority and direction of a properly designated commander over assigned forces in the accomplishment of a mission...," incorporates the legal and authoritative context of command.
- The statement that C^2 functions "...are performed through an arrangement of personnel, equipment, communications, facilities and

procedures...," captures the essence of a command and control system (around which the subsequent definition of communications is based.)

- Finally, "...employed by a commander in planning, directing, coordinating, and controlling forces...," introduces the fundamental notion that command and control is a process. A detailed discussion of this thought follows shortly. [Ref. 10:p. 4]

The extent to which these definitions imbue the personal nature of command is striking. Particularly important is that command is vested in an individual who is both responsible for the direction, coordination, and control of military forces, as well as legally and professionally accountable for what those forces do and don't do. US doctrine emphasizes that commander is the center, the essence of the C2 system. [Ref. 6:p. 16]

Two other factors that directly relate to the concept of the commander as the center of the system and are critical in understanding current perceptions on command and control involve the relationship between C2 and the principles of war known as the principle of unity of command and the principle of simplicity.

Unity of command has two major aspects: unity of effort and the premise that the optimum command and control structure resides in a single commander. Unity of effort manifests itself in several tangible ways, but is best described by a single word- cohesiveness. Increased cohesiveness logically results in an increase in effectiveness and synergistic use of an organization's resources.

The concept of a single commander comprising the optimum C2 structure is explained in terms of the limitations of human cognition and information processing. Although the word commander is singular, it is understood that command in a military organization consists of a hierarchy of commanders interrelated in a chain of command. The required "problem solving capacity" is obtained by arranging people with limited cognition and information processing capacity in a hierarchical structure. [Ref. 11:p. 169]

The principle of simplicity espouses the use of clear, uncomplicated and concise language to gain understanding. As pertains to command and control, the structures and procedures of command and control should be clear, uncomplicated, and concise.

3. The Process

Perhaps the most important philosophical hurdle, in the author's opinion, required in understanding and evaluating command and control is recognizing that it is a process. Whether cognizant of it or not, commanders have used (and will continue to use) this process since the beginning of warfare in order to exercises authority and direction over assigned forces in accomplishing the mission.

The *American Heritage Dictionary* defines process as:

> A series of actions, changes, or functions that bring about an end result. [Ref. 12]

The command and control process, in simplest context, is a problem solving process oriented towards effecting change in a target environment. The direction in which this process is oriented is predicated upon three central questions that form the basic logic used in developing any military campaign plan. Those questions are:

- What conditions must be produced to achieve the overarching goal?
- What sequence of events will most likely result in the desired conditions?
- How should resources be applied to produce that sequence of events. [Ref. 13:p. I-7]

Furthermore, the command and control process is embedded in a C2 problem solving system. The system problem solving system consists of a set of decision makers who are "interconnected" via a command and control structure and associated processes. Procedures are the processes used in a problem

solving system to arrive at a solution. The procedures of C2 are the formalized heuristics and algorithms employed to execute the functions of the command and control problem solving definition. Finally, the functions that comprise the process are an equally important part of the problem solving system. [Ref. 11:p. 168]

The functions of command and control, as enumerated in the JCS definition, are the planning, directing, coordinating, and controlling of forces. These functions belie those things the commander must do to forces to accomplish assigned tasks and objectives, and will manifest themselves in various ways depending upon the situation. The command and control loop or control cycle is the traditional paradigm used to model the manner in how military commanders decide how best to execute these functions.

Several individuals have wrestled with conceptual models of the command and control process. Although each representation has its peculiar and unique attributes, each is similar in that it depicts command and control as an iterative cycle of functions culminating in action and change in a target environment. The conceptual model offered by Joel S. Lawson, who retired from the Naval Electronic Systems Command where he was known as "the guru of Navy C3I," presents a complete, yet simple view of the C2 cycle, in the author's opinion. Lawson's models, as shown in Figure 2 [Ref. 6:p. 150] offer a sophisticated but easily digested blend of concepts that include the C2 cycle and its relationship with the environment and does an excellent job depicting the cycle's relationship to the C2 problem solving system.

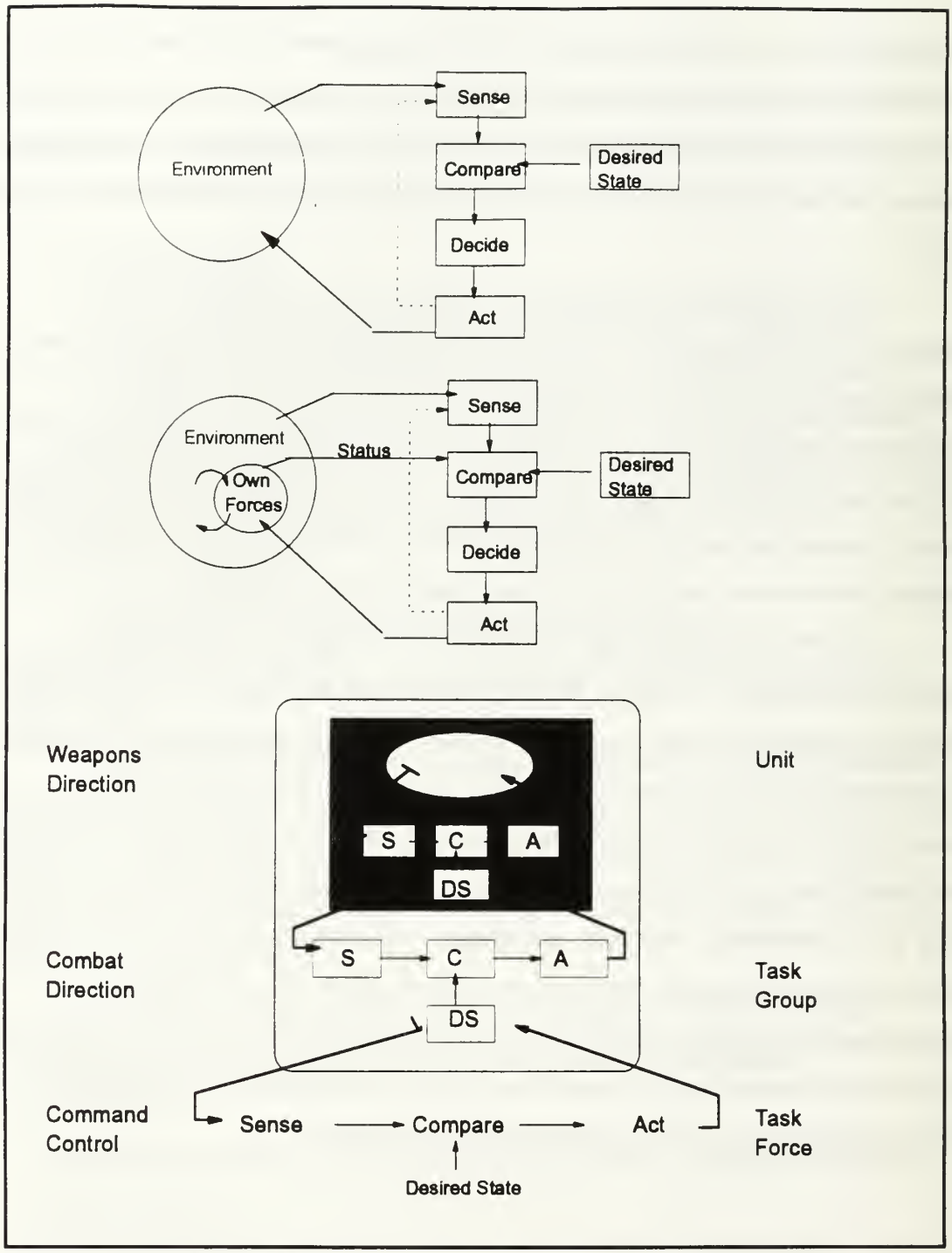

Figure 2. Lawson's Models of Command and Control

There are five basic functions indicated. SENSE is the function with which the commander gathers information on the battlefield via any data gathering activity (radar sites, forward observers, photo reconnaissance

systems, etc.). The primary focus is upon extracting signals from the environment. An important (and frequently overlooked) portion of this function is information management. Only relevant information must continue through the cycle to prevent clogging the system. This function heavily hinges upon the intelligence process discussed later in this chapter. PROCESS acts upon the gathered data to extract meaning from them. This function may also act upon data external to the environment, such as intelligence analysis indicating patterns representative of a division headquarters in a specific region of the operating area. COMPARE conveys the ability to interpret and analyze information and based upon this analysis, and discerning the current state of the environment as opposed to the desired state. As a result of the comparison, the DECIDE function entails selecting a course of action from possible options with the aim of moving the actual state to the desired state. Implied in this phase is the planning, preparation, and issuing of orders and plans. The ACT function executes the decision. [Ref. 7:p. 25]

When one's own forces are added to the environment, their results, status, etc., become a part of the data chain. The basic four step SENSE-COMPARE-DECIDE-ACT model as shown in Figure 2 is therefore a component in a more detailed and involved representation of the process. Lawson refers to this as his thermodynamic model of the C2 process in reference to its interaction with and effect upon the surrounding environment. The final diagram in the figure shows Lawson's loop nested three deep. The model represents a notional naval task force to illustrate the functional differences applied to this process at each level, as well as their conceptual similarity. [Ref. 6:p. 153]

This representation also fits in well with Lawson's larger view of command and control, which treats C^2 as a process in which different components have different roles while operating as parts of a larger system. Lawson feels that "to talk about a completely integrated C3I system is

ridiculous." The multiple parts that comprise a system must exist primarily as self contained, as well as perform definable and separable functions so that we can change one "module" of the system without affecting all the others. Logically, it then follows that the purpose of the command and control process is to either maintain or change the state of the environment in a manner or for a purpose determined by higher authority. [Ref. 6:p. 152]

C. INTELLIGENCE

> By "intelligence" we mean every sort of information about the enemy and his country--the basis, in short, of our own plans and operations. [Ref. 3:p. IV-1]
>
> Tell me what you know... tell me what you don't know...tell me what you think...always distinguish which is which. [Ref. 3:p. IV-9]

This thesis develops intelligence as an integral part of the command and control process. It is, in the author's opinion, a most critical consideration in C2, as well as every other aspect of military operations, a fact illustrated in the discussion of Lawson's cybernetic C2 loop.

1. Definition

Intelligence encompasses everything a commander knows and does not know about a given situation. Opinions concerning the nature and distinction between intelligence and other classes of information (such as information, combat information, data, etc.) vary widely. Current doctrine, however, clearly distinguishes between intelligence and information in order to "...better understand intelligence and its cycle." [Ref. 3:p. II-3] The definitions for intelligence and information are provided below:

> ***intelligence***: 1. The product resulting from the collection, processing, integration, analysis, evaluation and interpretation of available information concerning foreign countries or areas. 2. The meaning that a human

assigns to data by means of the known conventions used in their representation. [Ref. 3:p. GL-10]

information: 1. In intelligence usage, unevaluated material of every description that may be used in the production of intelligence. 2. The meaning that a human assigns to data by means of the known conventions used in their representation. [Ref. 8]

For purposes of this thesis, the definition of information is expanded to include all general knowledge available to a user, gained from a variety of sources, organic and non-organic. It can take many forms ranging from raw, unevaluated and incomplete, to fully processed. Information may be old and stale, or real time and instantaneous. Sources will vary from extremely reliable to known incorrect. [Ref. 14:p. 178]

The critical distinction between intelligence and information is that information is data that, although collected, have not gone through analysis, interpretation, or correlation with other data and intelligence. Analysis transforms information into intelligence. While both intelligence and information are important, and may exist together in various forms, they are not the same and have different connotations, applicability, and credibility. [Ref. 3:p. II-3]

Further distinctions are made concerning the *types* of intelligence. Joint Pub 2-0, Joint Doctrine for Intelligence Support to Operations, enumerates three primary types of intelligence which parallel the three levels of conflict- strategic, operational, and tactical.

Strategic intelligence is required for the formulation of strategy, policy, and military plans and operations at national and theater levels. *Operational intelligence* pertains to that intelligence required for planning and conducting campaigns and major operations to accomplish strategic objectives within theaters or areas of operations. Finally, *tactical intelligence* is required for planning and conducting tactical operations. [Ref. 3:p. II-1]

The intelligence sources, which encompass the means or systems used to observe, sense, record, or convey information pertaining to conditions,

situations or events, also require mention. These sources include seven primary types: imagery intelligence (IMINT), human intelligence (HUMINT), signals intelligence (SIGINT), measurement and signature intelligence (MASINT), open source intelligence (OSCINT), technical intelligence (TECHINT), and counterintelligence (CI). [Ref. 3:p. II-2]

2. Purposes

Commanders constantly seek information concerning the operating environment, which drives the entire command and control process. In military operations, either conventional or other than war, it is logical to anticipate that the force with the most relevant, accurate, and timely information has a distinct advantage in dictating the course of events.

> It matters little what the situation was at any particular point or moment: all that matters is what the commander **thought** it was. [Ref. 10:p. 6]

Recognizing the purposes of intelligence may assist commanders in employing it in the most efficient and effective manner. Intelligence should directly support commanders with complete and objective views of situations to facilitate relevant and timely decisions commensurate with their responsibilities, missions, and to the situation as it is known. A primary goal of intelligence is to advise and assist commanders in determining objectives that will attain or contribute to national security policy objectives, and derived military objectives. Intelligence should contribute, as determined by the commander, to developing, planning, and executing operations. The intelligence system must be structured and operated to reduce the possibility of deception or surprise. System flexibility is essential to allow for recovery if surprise does occur. Additionally, intelligence must provide the commander with an understanding of the adversary's command, control, and intelligence systems in order to determine appropriate deception and denial measures. Finally, the role of intelligence in assessing

operational results and determining when objectives are attained is critical to subsequent force reorientation and operational planning. [Ref. 3:p. III-4]

3. The Intelligence Cycle

The intelligence cycle depicted in Figure 3 is the process by which information is transformed into usable intelligence and provided to those who need it. Intelligence also has its steps represented in a time honored fashion. Although adequate for discussing the doctrinal intelligence structure, the cycle represents an oversimplification of intelligence operations in terms of the processes and mechanics involved. It is also important to note that intelligence actions do not necessarily occur sequentially in the cycle. For example, a request for imagery results in action in the planning and direction step, but may not require any additional collection because a production facility may have the image on file, thereby fulfilling the request. A detailed discussion of the functions in the intelligence cycle follows. [Ref. 3:p. II-3]

PLANNING AND DIRECTION entails establishing the command relationship of all intelligence elements within the force; identifying, prioritizing and validating intelligence and intelligence system requirements. Various types of intelligence support assets, including organic, attached, and supporting, are necessarily considered in this step. Planning and direction also includes identifying intelligence personnel augmentation requirements to other key staff areas, as well as the logistics loads and sequencing required to support intelligence operations.

COLLECTION includes both the acquisition of information and the provision of this information to appropriate processing and or production elements. The force collection management must have the capability to task any coalition force asset and obtain the aid of external resources if necessary. The disparate nature of the participants in OOTW present significant difficulties throughout the cycle, and are similarly prevalent in the collection step.

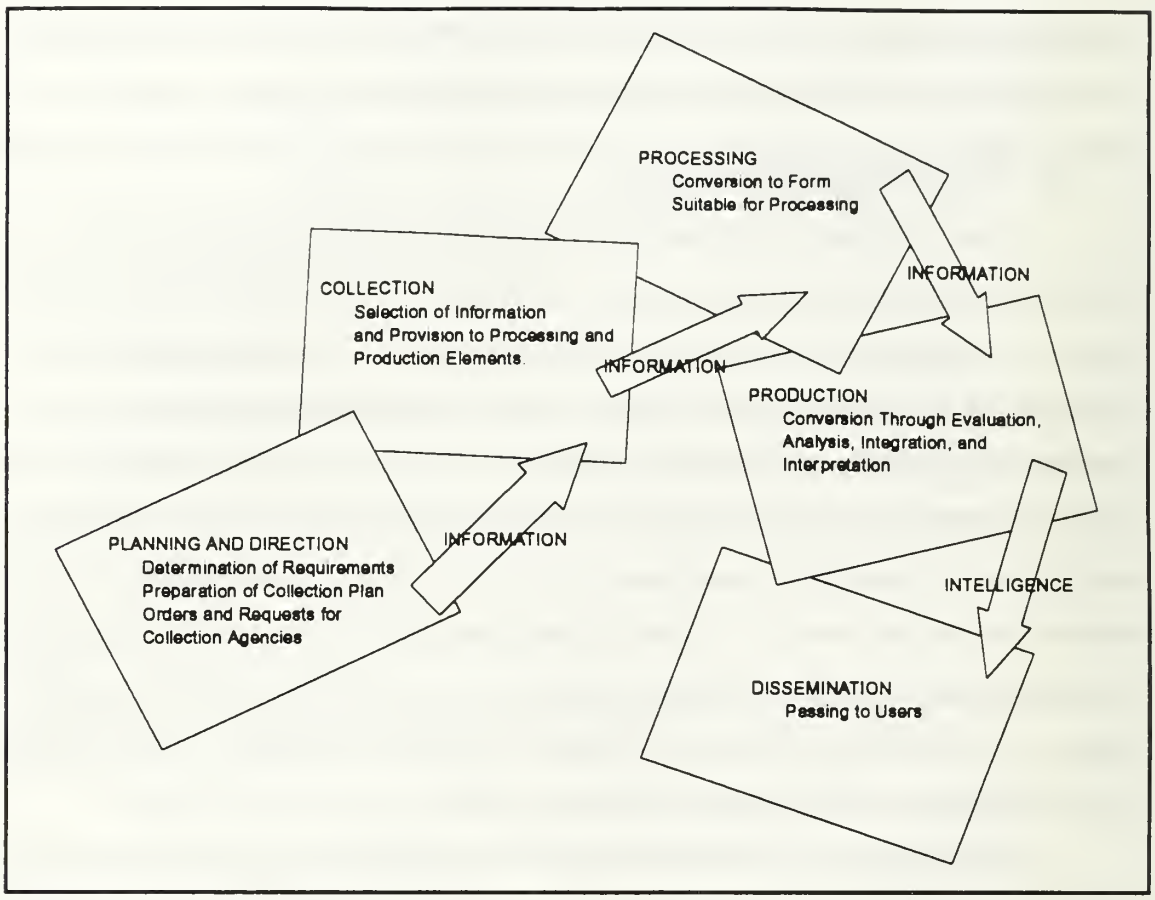

Figure 3. The Intelligence Cycle

Centralization of tasking must not, however, diminish the collection management element's responsiveness to the requirements of individual elements of the coalition. The system must also posses some redundancy to compensate for the loss or failure of any collection asset, and ensure that intelligence requirements are provided to the operating force.

Finally, optimizing coalition intelligence effectiveness requires clear peacetime delineation and practicing of appropriate organizational and agency responsibilities and procedures prior to the onset of operations

PROCESSING entails converting collected information into formats that are easily used by intelligence personnel in the analysis and production of intelligence. Processing includes data forma and format conversions, graphics, art work, photographic developing, and other forms of multi media production.

PRODUCTION is the integration, evaluation, analysis, and interpretation of information form any source or sources into finished intelligence to support military and related national security consumer requirements. Producers of intelligence must know what the user requires, and must produce objective, unbiased, and integrated products that provide appropriate individuals and organizations with the clearest possible picture of the situation.

Intelligence is useless unless it gets to those who need it. DISSEMINATION is the method of conveying intelligence to users in a suitable form, and occurs in a variety of forms via a variety of means (including hard copy, radio messages, data bases, pictures, etc.). Caution is necessary to ensure that users are provided with only the information they require. Information overload may otherwise result. [Ref. 3:pp. II-3-II-10]

4. Basic Principles

Intelligence doctrine encompasses intelligence considerations for all forms of military operations, both during war and at times other than war. There are several general principles developed that the doctrine establishes for joint operations that require consideration (and are indicated in italics). The doctrine indicates that *the Joint Force Commander (JFC)* is responsible for intelligence support to operations. This individual determines the strategic and operational objectives for the theater of operations, and decides on the relative importance of intelligence in accomplishing the mission. The J-2 (Joint Force Intelligence Officer) determines the intelligence requirements and the direction of the intelligence effort in support of the JFC's objectives. The intelligence effort is critical to the mission, and its nature, orientation, and scope depend on the commander's perspective concerning the role of intelligence.

Synchronization of all intelligence and counter-intelligence (CI) activities and assets is required to optimally support operations plans. The integration of intelligence and operations ensures totality and consistency of effort at the

agreed upon points. Effective synchronization results in the maximum use of every intelligence resource, where and when its contribution is greatest.

Military intelligence must use the same approach for support of peacetime operations, operations other than war, and war. While organizational size (particularly in Joint Intelligence Centers (JICs)) may shrink and expand with the scope and demands of an operation, a single structure is required to prevent difficult and time consuming transitions from occurring during critical situations.

Intelligence should play a role in the decision planning process from the moment operations are contemplated or directed. Although J-2, JFC relations are not standardized, the chief intelligence person should collocate with the JFC and function as a full staff member. This allows intelligence to provide the commander with the best information available, as well as to best identify, develop, and disseminate critical intelligence in support of operations. J-2 must also appraise the commander on the intelligence supportability of all contemplated campaigns, operations, tactics, and courses of action.

Unity of intelligence effort will facilitate overall unity of effort. Coalition operations may well involve a large, diverse array of intelligence assets. It is imperative that commanders recognize the need to, where possible and appropriate, exercise their authority to ensure that all mission related collection and analysis is coordinated in centralized fashion. This ensures complete, accurate, and current intelligence which provides coalition forces with the best possible understanding of the adversary and the situation, and will reduce duplication of effort.

Key elements in developing unity of effort lie in ensuring that appropriate forces and units have access to any mission related intelligence capability and coordination of all intelligence efforts n and about the area of

interest. Although cooperation of intelligence organizations is important, it does not replace the requirement for a unified and coordinated effort.

Commanders must recognize counterintelligence CI as a source of information. CI is separate and distinct from foreign intelligence, and is designed to support military commanders, operational planners, and traditional intelligence disciplines during planning and operations at all levels. Methods and varieties of support vary between organizational levels within DOD. CI has played an important role in recent OOTW, and develops information on threats to plans, resources, strategies, operations and systems posed by foreign intelligence services and intelligence collection by foreign groups. CI is responsible for identifying, neutralizing, and or exploiting this threat, and plays a significant role in both force protection and complementing intelligence functions such as collection and analysis.

Commanders must prioritize component intelligence requirements. Prioritization allows intelligence planners to focus finite resources on requirements in priority order. Furthermore, information flow management is critical in preventing the war fighter from receiving more information than he can "digest." The lowest command level possible should answer critical, time sensitive requests for information (RFIs).

5. The Intelligence Community

Joint forces may expect to receive support from a number of sources that are controlled and managed by organizations within the Intelligence community.

The Intelligence Community refers to those Executive Branch agencies that conduct activities contributing to the US national intelligence effort.. The Central Intelligence Agency (CIA), the Defense Intelligence Agency (DIA), the Offices within the DOD for the collection of specialized national foreign intelligence through reconnaissance programs, the Bureau of Intelligence and

Research of the Department of State, the intelligence elements of the services, the Federal Bureau of Investigation, the Department of the Treasury, the Department of Energy, the Drug Enforcement Administration and the staff elements of the Director of Central Intelligence comprise the intelligence community.

Intelligence elements of the Department of Commerce, the Defense Mapping Agency (DMA), the Armed Forces Medical Intelligence Center (AFMIC), the Federal Research Division (FRD) of the Library of Congress, and the intelligence components of the unified and specified commands are also intelligence contributors. [Ref. 15:pp. 9-10]

One may group these intelligence elements into five principle categories:

- National intelligence organizations
- Department of Defense intelligence organizations
- Military service intelligence organizations
- The intelligence components of the unified and specified commands and
- Civilian intelligence organizations. [Ref. 15:p. 10]

6. Principles for Multinational Operations

Current doctrine also acknowledges that US forces will often participate in operations with allied and friendly nations, as well as a host of other organizations which may require "user-provider" relationships outside normal parameters. There is no single intelligence doctrine for multinational operations, as each coalition or alliance develops its own. There are principles and concepts currently developed with the purpose of providing a starting point to develop the required "situational" doctrine.

There are many similarities between strictly joint intelligence doctrine and multinational procedures that stem from a common requirement--the need to provide support to the operational forces. Multinational doctrines, differences in

culture and national perspectives are just some of the differences that must be understood in order to either adapt current or develop new doctrine. [Ref. 3:p. VIII-1]

Joint Pub 2-0 identifies the principles that accommodate creating a seamless intelligence support architecture for a multinational force. Several key elements warrant discussion (and, again are identified in italicized print), and parallel other requirements posed by the unique environment in OOTW that is developed in detail in subsequent chapters of this thesis.

The first identified requirement is to *adjust national differences among nations*. This involves identifying a single Director of Intelligence and adjusting those support differences that may affect the integrated employment of intelligence resources as well as the sharing of intelligence and information.

Additionally, intelligence officers from each nation need to view the threat from a national and a coalition perspective. A shared perspective facilitates *unity of effort against a common threat*. Alliances and coalitions are developed in response to a common threat. Consequently, a threat to one member of the coalition is necessarily considered a threat to all.

Determining and planning intelligence is no easy task in a coalition environment. The requirements of all participants, as well as methods of production and dissemination all require agreement well in advance of operations. For anticipated situations and operations, a primary objective should be ensuring compatibility of intelligence operating doctrine and concepts. Identification of individual participant systems, communications, language and terms, and services and products is a further prerequisite to developing the "seamless" intelligence system desired in a coalition environment.

Special arrangements that facilitate the *full exchange of intelligence* are often required in ensuring that all participants have the required intelligence and information to accomplish their respective missions. Incompatibilities resulting

from culture, language and terminology, organizations and structures, equipment deficiencies, etc. are a reality in a coalition environment. The coalition should adjust and coordinate as necessary to ensure each member is adequately provided for.

An additional complication involves the disclosure of sensitive information to a coalition member. This is a contentious issue both in the substance of certain intelligence products as well as the manner in which these products are obtained. When sources and methods can not be shared among coalition participants, the intelligence should be sanitized, effectively separating the intelligence from the method in which it is obtained.

Establishing complementary intelligence operations requires identification of the resources, and capabilities and limitations of **all** coalition participants. Combined with a full understanding of coalition requirements will facilitate a synergistic intelligence collection and management effort. [Ref. 3:p. VIII-3-VIII-8]

7. Information Management

Timely decision making, crisis or otherwise, requires information. Providing this information requires time to collect and process. Better decisions require better (and sometimes more) information. Today, improved technology in mobility, weapons, sensors, and C4 systems continues to reduce the factors of time and space, cause faster tempos of operations, and generate incredible amounts of information. This information overload, if not managed, may ultimately degrade the reactions of personnel and ultimately the war fighting force. The more information collected, the longer the time required to process. The longer the processing time, the slower the decision cycle. It is essential to employ C4 systems that are designed to complement human capabilities and limitations.

The preceding description of information requirements in military operations suggests a dichotomy between the amount of information and intelligence desired in a situation and the potential effects that obtaining adequate levels of information has on the rapidity of decision making. Commanders should directly influence the flow of intelligence and information into their decision making process via the intelligence cycle.

D. COMMUNICATIONS

As previously mentioned, this thesis uses communications as an all-encompassing term that incorporates the "how it's physically accomplished" aspects of command and control. This includes considerations such as hardware, software, architecture, and procedures.

1. Definition

In simplest form, communications is defined as:

> A method or means of conveying **information of any kind** from one person or place to another. [Ref. 8]

Current doctrine makes a distinction between a C2 system and a C4 system as shown in the definitions of each.

> **command and control system.** The facilities, equipment, communications, procedures, and personnel essential to a commander for planning, directing, and controlling operations of assigned forces pursuant to the missions assigned.

> **command, control, communications, and computer systems.** Integrated systems of doctrine, procedures, organizational structures, personnel, equipment, facilities, and communications designed to support a commander's exercise of C2, through all phases of the operational continuum. Also called C4 systems. [Ref. 8]

Both definitions allude to the resources required to implement the C2 process. C2 systems, however, generally support only the C2 process (e.g.,

emergency action message (EAM) dissemination systems), while C4 systems (e.g., the Defense Message System; i.e., AUTODIN) support not only the C2 process but also common user and certain special purpose (communications, information, and management) systems and functions. In a practical sense, automated C2 systems are included within the umbrella definition of C4 systems, but not all C4 systems can be thought of as C2 systems. [Ref. 16:p. 1-4] To eliminate confusion, however, this thesis will consider and refer to both C2 and C4 systems as command and control (C2) systems.

2. Components

The pieces of a C^2 system are an important aspect of understanding potential system vulnerability. The "facilities, equipment, communications, procedures, and personnel," comprise the tangible aspects of the C^2 system. The components are interdependent, and the overall system is only as effective as its weakest link. [Ref. 10:p. 5]

FACILITIES may be as sophisticated as the National Military Command Center in the Pentagon, or as simple as a shelter half nailed to a tree in the field. Whatever the degree of sophistication, command facilities or fusion centers are an important part of any C2 system. They provide a location for housing personnel and equipment required to operate the system. EQUIPMENT includes all physical items involved in sensing, processing, computing, and displaying information. Examples range from the missile warning system used at the Strategic Air Command to an acetate covered map in the field. COMMUNICATIONS is the most dominant subsystem of the entire C2 system, but is not necessarily the most important. Communication system provide the connection between the commander, his forces, and his source of data. The term "communication" applies more than voice radio traffic. It can represent anything from satellite transmissions to the hand and arm signals a squad leader uses. PROCEDURE includes all steps used in planning, directing, coordinating,

and controlling assigned forces. The commander or pre-established standing operating procedures promulgate procedures. This is perhaps where the military leadership style of a commander is most prevalent. The commander has a great deal of flexibility in how he employs available technology, what information he receives, how often he receives it, and in what format he receives it. The PERSONNEL subset of the C2 system is without question the most important. It enjoys this distinction because the human element is the weakest and most complex part of the C2 system. The commander and his assigned forces are part, as well s users of the C2 system. No matter how good the system is, it relies on human interface for data input. The individual's decision making process directly affects all information input. The most essential element of the decision making process is the commander, the decision maker. The essence of the C2 process is decision making, which normally occurs under conditions of extreme uncertainty, great stress, and critical time sensitivity. Individuals not properly trained, confused by the fog of war, physically exhausted, or simply disheartened can adversely affect even an otherwise perfect C2 system. [Ref. 10:p. 5]

3. Objectives

Military forces must have information to operate. Desired is information that is relevant, essential, timely, and formatted so that humans can quickly understand and act on it. C2 systems provide the medium to process and communicate information to support command and control across the operational continuum. Although C2 systems may be complex, their underlying objectives are not.

C2 systems should promote the synergism of military forces and their supporting elements, by simultaneously bringing the thoughts, views, and impressions of multiple commanders, key personnel, and other experts to bear on any given task. The system must help decision makers form perceptions,

react, and make decisions. Simplicity, immediate responsiveness, and ease of understanding are all required to facilitate human effectiveness, especially during high stress situations.

Additionally, C2 systems must have the capability to rapidly respond to requests for information and to place and maintain the information where it is needed. Providing the information only where needed effectively reduces the potential to clog the communications network, hence reducing critical delays. The overarching goal of C2 systems is to fuse many pieces of information together in order to produce a simultaneous and accurate picture that meets the needs of all system users. Although no one information fusing will meet the needs of all users of the information, by providing users with concise, accurate, timely and relevant information, unity of effort is improved, uncertainty reduced, and the capabilities of the force as a whole are improved.

4. Principles

The C^2 system developed in support of coalition efforts in OOTW will require much forethought and consideration, and, as with any other complex system, must adhere to certain principles to ensure maximum utility to the operating forces. Some important factors are relevant to aspects involved in life cycle development, and are beyond the scope of the thesis. The earliest stages of command and control architecture planning, however, are guided by several overarching principles (annotated in all capital letters).

DISCIPLINE allows for the prioritization of information flow in a fashion consistent with the projected intensity and scope of the operation. More directly, the principle of discipline provides for the ability to control the flow of information gathering, processing, directing, and reporting to the commander. Mechanisms that facilitate system discipline include reporting structures, standardized message text formats and reports, standardized data base configuration (including structures, elements, and formats for bulk data uploads and updates,

precedence capabilities, preemption capabilities, call sign assignments, routing indicators, minimize procedures, and other physical and procedural measures. This concept is at least partially incorporated in emerging joint systems concepts such as C4I For the Warrior (C4IFTW) which emphasize the problem of "information overload", and advocate transition to the "information pull" concept. [Ref. 16:p. II-2]

ECONOMICAL SYSTEMS EMPLOYMENT, without sacrificing capabilities or survivability, is essential. This is accomplished in a number of ways such as s consolidating functionally similar facilities, integrating special purpose and dedicated networks into the DCS switched systems (if improved service is possible). Careful planning, design and procurement of facilities and systems, proper systems management and operating practices, as well as appropriate use of available commercial systems will further facilitate economy of employment.

The JTF C2 system requires sufficient INTEROPERABILITY to ensure success in OOTW. Interoperability is achieved between systems when information or services are directly (and satisfactorily) exchanged between providers and users. Equipment and systems are common when: 1) they are compatible; 2) operations and maintenance is possible (without additional specialized training) by personnel trained on other equipment; 3) repair parts are interchangeable; and, 4) consumable items (batteries, paper, etc.) are interchangeable. Current trends see DOD systems migrating more towards Commercial Of the Shelf (COTS) equipment. This may alleviate much of the interoperability problems currently experienced by US forces in a coalition environment. [Ref. 16:p. II-3]

COMPATIBILITY is the ability of two or more components to function in the same system or environment without mutual interference.

Systems architecture's require FLEXIBILITY to adapt, with minimal disruption, to the ever changing operational environment in OOTW. System flexibility allows planners to more readily "plug in" and un-plug" all levels of systems in and out of the architecture as the situation warrants.

C4 system capacity limitations mandate that commanders PRIORITIZE INFORMATION requirements to ensure that they system will accommodate the designated priority requirements.

The role of personal LIAISON in the dissimilar environment present in OOTW is critical. Liaison effects mutual understanding and unity of purpose and action, not only between military forces, but also between all other coalition participants. C4 systems liaison personnel are equally important in ensuring that the system functions as required/intended, and can take corrective action if required.

C4 systems must perform when required and as intended, demonstrating adequate RELIABILITY. This is achieved via providing sufficient alternate paths for information flow, standardizing equipment and procedures, electronic counter-counter measures, and establishing effective logistic support programs. [Ref. 16:p. II-3]

SECURITY is an integral portion of communications planning at the earliest stages. The threat environment will largely determine the level of Communications Security (COMSEC) provided for in the system architecture. Considerations such as user requirements and the susceptibility of transmission media to interception and exploitation are essential.

5. Defense Communications System

The Defense Communications System (DCS) is important to consider in this discussion, as it is the primary point at which the operational force will interface with required strategic relationships. The DCS is a composite of certain DOD communications systems and networks under the management control and

direction of DISA. It administers the C2 requirements of DOD and civil agencies directly concerned with national security or other critical emergency requirements. The objective is to organize the complex of DOD communications networks, equipment, control centers, and resources to provide an effective, responsive, survivable worldwide communications system. [Ref. 16:p. II-3]

E. CONCLUSIONS

This chapter provided a broad look at the origins, nature, objectives and principles that pertain to both command and control, and its inseparable components, intelligence and communications.

Command and control is based upon a pyramidal structure of considerations, each tier of which has its roots in history and tradition. The vernacular of C2 is historically contentious- a malady which joint doctrine is intended to fix.

US military conceptions of command and control hinge heavily upon the notion of unity of command, both as pertains to authority vested in a single commander and the unity of effort that is a result of this single source of authority.

Conceptualization of C2 as an iterative and interactive problem solving process is a key element of the foundation for the remainder of the thesis. The process is established in order to create a change in a target environment, and structured in accordance with three overarching questions that identify the change of state desired, the milestones to reaching that state, and the resources available to effect the change. The process is represented in a number of ways as an iterative cycle comprised of functions (such as is developed by Lawson). Each function plays a specific role in the cybernetic progression that allows the commander to assess the condition of the operating environment, compare that

condition to the desired state, decide what action is necessary, and then execute the action decided upon.

Intelligence is established as a prerequisite for command and control decision making. The importance and characteristics of adequate intelligence to an operational force is also outlined in this chapter. The intelligence process feeds the command and control process, and is also represented as an iterative cycle. Multi-national operations pose significant challenges for the intelligence community and are identified in current doctrine. Considerable forethought is required to ensure adequate and appropriate intelligence support is provided to coalition members.

Planning sufficiently in advance to ensure the capacity to share sensitive information and intelligence, as well as to coordinate the disparate types of intelligence resources present in a multi-national environment are key considerations. Equally important is the ability to correctly identify and provide for the very different intelligence needs of the various participants in a coalition. This is particularly challenging, in part, because of the information management problem. Technological trends and the common perception that more is better pose potential problems as pertain to a force collecting more information than is necessary or desired.

The net effect of "over collection" is that it hinders the commander's ability to make a timely decision with the best information available. Collected information requires time to process into usable intelligence. Unfocused or poorly aimed collection efforts clog the force's processing capability with information of little or low priority utility to the force. Consequently, a commander experiences either a lack or lag of the information needed to orchestrate a force's efforts.

Finally, to achieve its intended goal, a command and control process must be supported by a command and control system. A command and control system

facilitates the exercise of authority by providing information to the commander and by conveying the commander's decision to the field. The sole function of the command and control system then becomes one enabling a commander to sense, compare, decide, and to act. It is a set of interconnected systems comprised of input, decisions, and output, developed in concert with certain overarching principles and objectives, and linked together by communications and electronics systems.

An effective C2 system is the net result of successful interaction of a complex architecture comprised of physical, human and procedural elements. Developing multinational architecture's poses several predictable challenges as pertain to common doctrine, procedures and equipment. Ideally, the architecture will be transparent to the users; both commanders and forces being commanded. As long as data is conveyed to the decision makers and orders are passed to appropriate units, however, users easily forget about the complexity of the process. What is critical is remembering that a C2 system is not just a series of components. Rather, "command and control system' is an all encompassing term that includes all processes, interrelationships, and interdependencies of each component and subsystem. [Ref. 10:p. 5]

III. OPERATIONS OTHER THAN WAR

A. INTRODUCTION

1. Purpose of the Chapter

The purpose of this chapter is to provide a general overview of the irregular environment, identify appropriate distinctions between OOTW and conventional operations, and draw conclusions regarding the implications of these distinctions with respect to US perspectives concerning command and control.

This chapter provides the reader with an analytical framework for understanding the nature of OOTW. It identifies the critical dimensions and guiding principles required to successfully navigate through the OOTW environment.

2. Significance

The OOTW environment is different from conventional military operations in many ways that fundamentally alter and complicate the nature of the C2 process as developed in Chapter II. The determination of desired changes in the target environment developing the plan to effect those changes, and the implementation of that plan are significantly impacted by the peculiarities of OOTW. Accurate understanding of the environment is required to identify potential problem areas and to facilitate the development of appropriate decision making processes.

3. Types of OOTW

Military operations other than war encompass a wide range of activities where the military instrument of national power is used for purposes other than the large-scale combat operations usually associated with war. Although these operations are often conducted outside the United States, they also include military support to US civil authorities. Military operations other than war usually involve a combination of air, land, sea, space, and special operations forces as well as the efforts of governmental agencies and non governmental organizations, in a complementary fashion. [Ref. 17:p. V-1] The types of OOTW run the gambit from support to US, state, and local governments, humanitarian assistance and disaster relief, nation assistance and drug interdiction, to peacekeeping, support for insurgencies and counterinsurgencies, non combatant evacuation, and peace enforcement. [Ref. 18:p. 13-0] Although the focus of this thesis is not to specifically differentiate between the various types of OOTW, definitions are contained in Appendix B.

4. General Overview

Military operations are dynamic. Commanders are accustomed to contemplating change in the direction and depth of battle and adjusting battle plans to achieve specific, easily defined, military objectives in a dynamic situation. As with any military employment, conventional operations are typically driven by political objectives, and require a C2 capability that supports the application military means for political ends.

Operations other than war are also dynamic, but considerations of less importance in conventional operations attain much greater significance in OOTW. The political dynamics inherent in the OOTW environment are at the core of this observation. [Ref. 19]

The objectives established for UNISOM II clearly illustrate the potential political nature of stated objectives in OOTW. OPERATION CONTINUE HOPE,

UNISOM II's official name, was authorized by UN resolution 814 on 26 March 1993. The resolution called for a nation-building effort in Somalia intended to restore some semblance of government, internal security, the administration of justice, and economic stability. Towards these objectives, specific goals included keep the peace, achieve disarmament, facilitate economic rehabilitation and help to rebuild the institutions of civil society with a broad representation from the Somali people. [Ref. 20:pp. 6-7]

Based upon this overview, there appear to be, in the author's view, several primary conceptual transitions pertinent to command and control that a US commander must make in order to fully understand the OOTW environment and its implications for military operations. Considerations including the nature of OOTW, the role of the US military in OOTW, the complex and varied nature of other participants, and the interaction between the US and other participants are among the critical areas on which this chapter will focus.

B. THE NATURE OF THE OPERATION

1. General

OOTW originate for many reasons, and have several manifestations. They may precede, follow, or occur simultaneously with war. They may occur in conjunction with conventional operations to complement the attainment of strategic objectives. They may occur domestically or abroad, as part of a combatant commander's forward presence operations or a US Ambassador's country plan. [Ref. 18:p. 13-1]

One characteristic common to all of these operations is that they are dynamic and unpredictable, and may potentially experience several shifts of direction during their course. All of these missions require that participants have

a thorough situational awareness and understanding, and conduct in-depth mission analysis to ensure that their efforts are correctly aimed.

> Peacekeeping, for example, demands that the peacekeeping force maintains strict neutrality. One or more of the belligerents may attempt to provoke a response from peacekeeping forces that could undermine long-term peacekeeping efforts. Certain military responses to civil disturbance may solve the immediate crisis but subvert the legitimacy of local authorities and cause further civil unrest. Humanitarian relief and nation assistance should not promote dependency on aid from outside sources. Quick, efficient action by US forces that resolves an immediate issue without considering the long-term consequences and goals may promote instability. In operations other than war, victory comes more subtly than in war. Disciplined forces, measured responses, and patience are essential to successful outcomes. [Ref. 18:p. 13-1]

Force flexibility is also an imperative, as the potential to rapidly transition from OOTW to wartime operations (or vice versa) is high. OOTW do not always occur in peaceful and benign environments. Resolute opponents may decide that continuation of hostilities (with their original opponent as well as with the forces introduced to produce order) is in their best interest. While the forces engaged in OOTW have an inherent right to defend themselves, the use of force to subdue any party to a conflict may complicate the situation and render peaceful objectives unattainable. The dividing line between war and other than war, however, is not always distinct and campaign plans must consider both if the force is to retain the initiative. [Ref. 18:p. 13-1]

2. Dimensions

US Army doctrine currently under development captures the political essence of operations other than war and the variance with respect to conventional operations through a discussion of certain "dimensions" of OOTW, which determine the nature of a particular operation.

a) The Nature of the Mandate

Unilateral US conventional operations typically involve clear cut, straight forward mandates, with very specific goals, that emanate from the National Command Authority. OOTW, by nature, are much more politically sensitive, resulting in a much wider array of mandates. The dichotomy present in this situation, however, is that the more politically oriented the mandate, the greater the difficulty in transforming the mandate into obtainable objectives. [Ref. 21]

Mandates convey both direct and implied missions. Commanders must, therefore, carefully analyze the mandate to develop appropriate strategic and operational concepts and objectives, focusing on what is "do-able" for a particular force. [Ref. 22] The mandate issuing authority may authorize a very narrow and specific mandate, or one more broad and ambiguous in nature. The degree of specificity or ambiguity in the mandate will vary per the situation in accordance with both the amount of information available about a given situation at a particular time, and with the level of consensus that exists among participating nations as to what the mandate should incorporate.

Embarking upon an operation without a clear, concise, and accomplishable mandate is ill advised, and potentially dangerous. This is perhaps best illustrated in the infamous 10 October, 1993 US raid in Somalia in which two US helicopters were shot down, and 18 US servicemen died in the subsequent battle to rescue US Army Rangers trapped at the raid site. The transition to UN authority, which marked the onset of UNISOM II, represented the start of a much more ambitious and broad operation in Somalia. With strong US backing, the UN Security Council approved an experimental, and virtually open ended mandate for UNISOM II. In addition to providing humanitarian relief, UNISOM II was to assist in "rehabilitating political institutions and the economy and promoting political settlement and national reconciliation." [Ref. 23:p. 66-67]

The mandate authorized and, according to many, even expected that force would be required to accomplish the outlined goals. It was understood, that removing the guns from the hands of the warlords and their respective followers was key to accomplishing the overarching goals of the coalition. UNISOM II was mandated to go directly to the causes of the conflict, and seek solutions that would optimize chances for sustained and real recovery. Not surprisingly, the operation was also immediately challenged by Aideed, who had adamantly opposed UN intervention. The operation was further plagued by command and control problems, organizational confusion, administrative weaknesses, funding shortfalls, and differences in national policy inherent in multinational operations. [Ref. 23:p. 66-67]

During OPERATION SEA ANGEL USCINCPAC Admiral Charles R. Larson issued but one order to his task force commander, then Major General H.C. Stackpole III.

> Go directly to Bangladesh. Report to the US Ambassador and render humanitarian assistance and disaster relief to the government of Bangladesh. [Ref. 22]

Many experts believe that mission type orders, such as the one detailed above, are exactly the type of orders most appropriate in situations like SEA ANGEL, where reaction time figured heavily into the calculus of who would die and who would live, in the aftermath of the devastating cyclone.

Identifying the mandate is also imperative, as it helps determine an operation's end state. The end state, driven by the respective "National Command Authority" of coalition nations (where appropriate), spells out the conditions that, when accomplished, attain the strategic objectives of the coalition, or perhaps signal a point of transition and subsequent hand off to other organizations. End states are subject to change over time with the fluctuating environmental factors. desired end state is derived from a clear and concise mandate. From the end state springs the strategic concept, the objectives or

milestones required to meet those objectives, as well as the queues for effecting transition of the operation to non-military organizations. [Ref. 19]

Since peace operation are by their nature intended to create or support conditions conducive to a negotiated conflict resolution, they will always complement diplomatic, economic, or humanitarian efforts. Success is characterized more broadly in OOTW than in conventional operations, and is measured by the extent to which these combined activities progress toward the mandated end state and not simply by the attainment of military objectives. Objectives are defined, as in wartime, but they go well beyond (but may include) the "capture and destruction" goals typically inherent in conventional operations. Open ended objectives, such as the continued cease fire between belligerents in peacekeeping operations, or very specific objectives such as re-opening public schools, utilities, and other services on a target date following natural disaster, or reducing the death rate in the wake of famine are common examples of how objectives are structured in OOTW. It is imperative that this measurement of success be understood because military objectives may shift over time in response to changed circumstances which may cause frustration within the force. [Ref. 19 and Ref. 18:p. 13-2]

b) The Source of Involvement and Authority

Individual nations typically sponsor the employment of a nation's military forces for war. Sponsorship in OOTW is not nearly as clear cut, as mandates frequently emanate from international or multinational agreement, informal consensus, or an international organization such as the UN. Ideally, a single mandate is issued from a single authority to all participants. However, this is not always possible. Frequently, authority for action is derived from a myriad of multiparty agreements, resolutions, and bi-lateral accords, of both the formal and informal variety. Recent history is rich with examples of the variety of sources of mandate.

For example, Provide Comfort began as a humanitarian relief mission acting under UN. mandate. The expanded mission of carving a security zone in Northern Iraq, however, was not sanctioned by the UN due to the implications for Iraqi sovereignty, but rather was authorized by respective governments of coalition participants. [Ref. 4:p. 14]

c) The Operational Environment

The nature of the operational environment is critical in that it is a key determinant in the types of forces and resources required in a particular situation at a particular time, as well as allow for prior planning for the potentialities that may possibly present themselves. Logically, organizations, both military and non-military, have capabilities and limitations that make them better suited for some scenarios than they are for others.

There are three principal variables that comprise the operational environment in OOTW: the level of consent, the level of violence, and the degree of partiality. These variables do not necessarily contribute equally, but are interrelated and may shift in magnitude and importance over the course of the operation. Their intersection, however, determines the nature of the operation. Control of the operating environment hinges upon the commander's recognition of these variables, and his ability to influence their pace and direction of change. [Ref. 19]

The level of consent in the OOTW is an important part of the operating environment. War is not an activity that requires the consent of the party against whom action is taken. Peace operations, however, are fundamentally different, as the degree of consent present in the "target environment" dictates many aspects of how the operation is approached. The range of consent is significant. Total consent or total lack of consent may prevail. One party may consent partially, or in total; or consent may vary dramatically over time. In traditional (or non-traditional) peacekeeping

operations, for example, loss of consent may result in uncontrolled escalation of violence and subsequent resumption of hostilities. Therefore, maintaining the level of consent is a critical concern for commanders, both as it effects the security of the force and its ability to accomplish the mission.

Force security and mission accomplishment also hinge upon the fact that operations other than war encompass a broad continuum of levels of violence. The environment may range from totally benign to very violent. In these situations, use of violence potentially begets more violence. This cycle may quickly escalate in severity, and exceed the capacity of the force to manage it. Accordingly, commanders must fully understand the relationship between violence and the desired end state, and employ violent measures judiciously.

Nowhere was restraint more evident than in the situation confronting the first US forces to enter Iraq during the intermediate phase of OPERATION PROVIDE COMFORT. Although a demarche had been issued to the Iraqis, that outlined coalition intentions and demanded a withdrawal of Iraqi military forces remained. As coalition forces moved into the town, there were several confrontations between Iraqis and US Marines. However, patience, firmness and discipline of US forces prevented fighting from erupting, hence preventing the situation from escalating. [Ref. 24:p. 20]

Finally, impartiality is imperative in OOTW. Peace operations often involve interposing neutral forces between two belligerent parties. The actions of the force hinge upon the type of mission it is involved in. Maintaining this neutrality, and thus, impartiality, are essential elements in designing a forces actions and concept of operations. Impartial acts and, as important, the perception of force impartiality by the belligerents is vital in creating a stable, lasting resolution to many situations.

Forces must take care not to demonize one of the parties in an internal conflict, as perceptions of partiality have implications for the intervening

force. Taking sides is seen as a violation of the internal political process of the country which is to be restored with the resolution of the conflict. The more inclusive post-Cold War coalitions are likely to include partners who differ in their sympathies and allegiances for the parties of the conflict. Choosing a side may mean turn one part of the coalition against another. [Ref. 25:p. 27]

The perception of partiality in a target environment is influenced in varying degrees by a number of other factors in the operational environment. The geopolitical situation, social conditions and cultures, scale of a conflict or presence and durability of a cease fire, number, discipline, and accountability of contending parties, degree of law and order, efficacy of the local government, and cooperative nature of the local population all impact upon the choice of action of the operating force, as well as the perceptions of the indigenous population as to that forces' partiality.

The lessons of the essence of impartiality are written in blood. In Lebanon during the early 1980's, American intervention was aimed at providing a neutral agent to quell the fighting between Christians and Muslims in Beirut as part of a larger effort to create an Arab-Israeli settlement. The order for US Navy ships to shell Syria and Lebanese Moslem targets in East Beirut, however, suddenly made targets of the Marines ashore. The flawed understanding and management of underlying political conditions turned US participation, in the eyes of most of the Arab world, partisan. The result was 241 US Marines killed in retribution and a subsequent US pull out. [Ref. 26:p. 52]

d) The Global Visibility of the Operation

There is little argument that the media is often a catalyst for both US and international action. Horrific examples of mass human suffering as portrayed on television and the subsequent internal outrage generated in the American public have figured significantly in spurring US involvement in situations that have more moral pull than dire consequence for US national security. The

rapidly developing nature of technology, and the commensurate effects upon the speed and volume of global information transfer have significant impact upon peace operations. Media coverage forms both world and national opinion, hence support for operations. Support generated by CNN captured images of US and coalition forces feeding starving Kurds in the snow-capped mountains of southern Turkey is just as quickly eradicated, as the mutilated body of a dead US soldier is dragged naked through the streets of Mogadishu.

Commanders must remember the political, strategic, and operational impact the media may have in peace operations, and further its influence over planning, defining objectives and gauging success. Whether for or against a particular operation or objective, media reports have a non-trivial impact that may influence the participation of all parties involved. [Ref. 19]

C. ROLE OF THE MILITARY IN OOTW

1. General

In conventional operations, the military is typically the sole instrument involved in creating change within a target environment. Contrastingly, the ultimate military objective in a peace operation is the creation of a situation that serves the cause of peace through the development of a lasting negotiated solution. US military participation in OOTW furthers American interests by defusing crises and nurturing peaceful resolution of conflicts, hereby minimizing the need for combat operations. [Ref. 18:p. 13-1] The operation, therefore, should be viewed as part of a wider, concurrent effort, not as an end in itself. [Ref. 19]

The capability of US military forces is impressive and unparalleled. The capacity of US forces to react to the crisis s ations prevalent in many peace operations is unparalleled. Even in non-cr situations, US military training,

resources, equipment, and command and control capability, especially as exists in a JTF structure, make the military a logical nucleus around which to construct a larger collaborative effort. The military has the wherewithal and capability to coordinate those who are not coordinated. [Ref. 22]

The initial response by international relief organizations to both OPERATION SEA ANGEL and OPERATION PROVIDE COMFORT, for example, was poorly organized, and exceeded the ability of humanitarian organizations to cope. In Bangladesh, the relief effort was hampered by both a lack of coordination and information, as well as from sporadic and disorganized supply deliveries from private organizations. On the Turkey-Iraq border in PROVIDE COMFORT, the relief agencies were trying to tackle a problem well beyond their collective capacities. "We're overwhelmed," said Steffan Bodemar, the chief of mission in Baghdad for the United Nations High Commission on Refugees (UNHCR). Military involvement in both cases contributed significantly to increasing the organization and distribution capability in both relief efforts consequently resulting in significant saving of life. [Ref. 27:p. 15]

Creating a secure environment in which "relief forces" can operate and establishing a credible threat of force are the pivotal first steps in achieving these overarching objectives. The primary purpose of the military is to protect the weak and provide security. Combat units are required to quell the crisis, establish a secure environment, and provide coordination and logistics support. Once the crisis is past, combat forces must transition the operation to non-combat forces and civilian authorities. [Ref. 22]

The historic role of US military forces has involved providing security, protecting the weak, and responding to crisis. In many situations, the precursor of distribution of humanitarian assistance is the creation of a secure environment both for the affected population and for the force doing the aid. This was the

case in both Provide Comfort and RESTORE HOPE. Again, when possible, the intervening force must strive to maintain the appearance of impartiality.

In Somalia, the factions that overthrew the Siad Barre regieme in 1991 were individually incapable of forming a government to supplant the one they had overthrown. As a result, the structure of government crumbled, and anarchy ensued. "Armies" of young thugs nominally loyal to one warlord or another took to the streets, terrorizing the population and stealing or ransoming most of the food supplies intended for the victims of a long term drought and civil strife. These interruptions created alarmingly increasing death rates, and the US, under UN auspices moved to break the pattern by imposing order to create a secure environment. [Ref. 4:p. 10]

Higher authority must also take every precaution during the development and assigning of missions not to create impressions or perceptions that US. military presence is anything other than temporary. Few organizations in the world are equally adept at responding to crisis as effectively as US. forces can (if properly directed). Once the crisis is over however, combat units must withdraw and turn the operation over to either the host nation, or civilian organizations. Emphasis must be on "basic relief efforts.

> No disaster/humanitarian relief mission is intended to rebuild a regional or national economy/infrastructure. Rather, military efforts should aim towards enabling a host nation to regain its footing and resume providing for its population. Once the crisis is past, military forces must effect the transition to civilian/host nation organizations. [Ref. 28:p. 19]

Although increasingly common, employing military forces in OOTW is not a panacea, and one must ensure that the capabilities and limitations of the military instrument are clearly understood by those who would order their employment. There is often a "knee jerk" reaction when crisis develops in an area of the world with purported or actual strategic importance to the US However, US leaders should exercise an increasingly great deal of selectivity

when committing combat forces in OOTW. Certain units are more appropriate for long term involvement than others. Extended use of US combat forces in civil functions (as occurred after such operations as POWER PACK, URGENT FURY, JUST CAUSE, AND PROVIDE COMFORT) conflicts with the he NCA's desire for rapid re deployment of forces. Additionally, it causes DOD to absorb unbudgeted expenses not directly related to war fighting. [Ref. 29:p. 30]

Finally, a commander must accurately assess his mission as one either not involving combat, one potentially involving combat, or one where combat is likely. This fundamental understanding will facilitate a more appropriately structured force, as well as enhance the capability to plan for and conduct operations and develop military objectives to achieve the desired political ends. Where this determination is not clear, the commander must press the authorizing body for clarity since misunderstanding or misperception is potentially disastrous, a factor enhanced through translation of the mandate into multiple languages and differing cultural perspectives. [Ref. 19]

Currently, in the author's opinion, much debate revolves around the appropriate role of military forces in peace operations. Questions that include: Do we need separate forces specifically designed for peace operations?; Do combat forces require special training and equipment in order to contribute?, and; Should US forces participate in future Somalias and Bosnias?, are all recurring disputes. The purpose of this thesis, however, is not to argue these particular (but very appropriate) questions. Therefore, a baseline assumption central to the remainder of the thesis is that the US military can and will participate in future OOTW.

2. Command Relationships

The instruments of national power may be applied in any combination to achieve national strategic goals in operations other than war. The manner in which they are employed is determined by the nature of each situation. For

operations other than war, the military instrument is typically tasked to support the diplomatic instrument, working with the economic and informational instruments. US forces may participate in OOTW in three different operational arrangements. [Ref. 17:pp. V-1,2]

a) US unilateral action

Political considerations or requirements for quick reaction may require the US to act alone in conducting peace operations. There is often a tendency for the US to seek consensus for its participation in OOTW, if for no other reason than to assuage "colonialist" perceptions that could potentially arise. There are instances when unilateral action better serves US interests. For example, in 1958, the US unilaterally intervened in Lebanon at the behest of the Lebanese government. Additionally, the unique capabilities of the US armed forces may mean that the US is the only nation in a position to conduct a particular peace operation Participation in coalitions is sometimes necessary. However, we must ensure that we do not squander lives and resources on those areas that are not strategically important to the US. [Ref. 1]

b) US as lead nation with support from international organization

This organization may be the UN, NATO, or another international organization. Recent trends indicate that the US will avoid purely unilateral action. US intervention in the Dominican Republic (OPERATION POWER PACK) conducted under the aegis of the OAS in 1965, and OPERATION PROVIDE COMFORT under UN sponsorship are examples of this type of arrangement. Further, OPERATION RESTORE HOPE was planned and executed by the US under the auspices of the UN. The subsequent UNISOM II involved a transition of command relationships to the third possible arrangement, as is discussed below.

c) Other state or organization lead, US forces supporting

The US force may be tasked to provide support such as transport, medical, intelligence, or material to a peace operation conducted by another nation or international organization. OPERATION RESTORE HOPE, a UN sponsored, US led operation turned responsibility of the operations in Somalia to a UN command (UNISOM II). This is an example of a non-US led coalition committed to execute mandates sponsored by various international or regional organizations. [Ref. 19]

D. NATURE OF THE FORCES

The precedent for collective action is established. Historically, coalitions were seen primarily as means for preserving regional balances of power. The frequency of UN involvement in OOTW since the end of the Cold War has resulted in significant changes in how collective action is viewed and approached. Between 1947 and 1986, the UN was involved in fourteen peacekeeping missions all relatively small with the exception of the UN operations in the Congo during the 1960's. Since 1986, however, the UN has embarked upon 21 operations. It would appear that the world community has come to view coalitions, and the legitimacy and burden sharing advantages that stem from them, as the mechanism with which to respond to problems in the New World Order (or dis-Order). [Ref. 30:p. 36 and Ref. 31]

Having established the strong likelihood that the US will not embark upon these operations alone the next logical step, is to look more closely at the identity and nature of the key partners and players in these endeavors. Commanders must have appropriate understanding of the variety of potential partners in the coalition environment. As the role of the military is established, this discussion will focus on the other non-DOD entities, both national and international.

1. State Department

The Department of State (DOS) is a principal player in operations other than war outside the continental United States (CONUS). DOS is the primary source of foreign affairs information for the US government. Much of the national security and economic information available to the government, and much of the data on the internal politics of foreign countries originates here. Ultimately, the State Department strives to take the lead in responding to issues that erupt using a "here's the problem" here's their position," and "here's what we should do about it" format. [Ref. 32:p. 43]

Primary policy guidance is provided from DOS in the following areas:

- Matters having an impact on US relations with other countries.
- The extent to which commanders can interfere in the government of a particular country.
- The level at which the economy of a country is maintained.
- Matters involving informational programs, psychological aspects, and attitudes for the indigenous population.
- Plans or procedures for the return of civil government. [Ref. 19]

Subordinate elements of the State Department play correspondingly important roles. The US conducts diplomatic relations with more than 170 countries and maintains about 270 embassies, consulates, and missions worldwide. Embassies provide detailed analysis of the politics, economic trends, and social forces at work in foreign countries. This information is shared with some 60 federal agencies concerned with national security, intelligence, economic and commercial concerns, and science and technology.

The Embassy is headed by an Ambassador, who is the personal representative of the President and , as chief of mission, has overall direction, coordination, and supervisory responsibilities of US government activities and personnel in a host country. This authority does not extend to personnel in other

missions or those assigned to either an international agency or a combatant commander.

Ambassadors, and other diplomats make significant contributions in many ways, to include establishing "cordial" relations with host nations, directing efforts of other US agencies, and co-opting cooperation from agencies that may not respond as favorably to military requests. These actions potentially relieve the Joint Force Commander of much of the diplomatic burden. Additionally, Ambassadors have a better feel for the culture, geography and other demographic information that can facilitate or expedite action, and may also assist the JTF commander by running interference with the State Department in resolving militarily related diplomacy problems with Allies, such as interpretation and implementation of Rules of Engagement (ROE). [Ref. 32:p. 48]

If a crisis develops in an area where the US has no diplomatic mission, the President may send a representative with instructions that vary from the standard authorities and responsibilities of a chief of mission. Such was the case during OPERATION RESTORE HOPE. US Special Envoy Robert Oakley, in conjunction with UNITAF task force leadership and backed up by the overwhelming firepower of the US armed forces who comprised the preponderance of UNITAF combat units, was able to negotiate a cease fire with the major parties to the conflict in Somalia. This halted the fighting long enough to allow the task force to escort disaster relief and food supplies to those areas in greatest need. [Ref. 20:p. 4]

2. Other US Government Agencies

Many other US Government agencies may also play a role in OOTW. Among these are the Department of Agriculture; the Department of Commerce; the Department of Justice and the Department of Transportation.

The Federal Emergency Management Agency (FEMA) serves as the central point of contact within the federal government for a wide variety of

emergency response activities including planning, mitigation, response, and recovery in crisis situations, whether natural or technological. FEMA's responsibility is to supplement disaster assistance available through state and local governments, not to supersede it. FEMA is also responsible for coordinating disaster assistance rendered by all other federal agencies, including the military. It will also, with appropriate consent, coordinate the disaster assistance provided by state and local governments and private relief agencies. [Ref. 32:p. 64]

The US Agency for International Development (USAID) administers US economic and humanitarian assistance in more than 100 countries. Within AID is the Office of Foreign Disaster Assistance (OFDA), and within OFDA is the Disaster Assistance Response Team (DART). The US Information Agency (USIA) is charged with explaining and supporting US foreign policy and national security interests abroad through a wide range of information programs, including Voice of America. [Ref. 32:p. 48]

3. International Organizations

Examples of international organizations that may be involved in irregular operations include the United Nations (UN), the International Committee of the Red Cross, and the UN High Commissioner for Refugees. These organizations may assume the lead to coordinate actions for other non-governmental agencies. Military planners should therefore establish contact with lead non-governmental agencies to ensure coordinated efforts.

a) The United Nations

The United Nations is the organization most likely to undertake peace operations, as previously enumerated. From a US perspective, the UN is important in that it provides forces, money, and legitimacy (theoretically) to the operations.

In the years since the Gulf War, the UN has expanded its role in world affairs to include participation in much more "muscular" types of undertakings. Increasingly, UN forces are involved in even more aggressive, peace enforcement and "nation building" operations that entail disarmament of hostile factions, delivering humanitarian assistance, training police forces, conducting elections, and monitoring human rights. This invigorated agenda, however, poses several areas of concern.

Based upon noted inadequacies, both surmised and experienced, the US has significant misgivings concerning American participation in UN lead operations. There exist festering issues concerning organization, doctrine, command and control, funding, logistics, and rules of engagement that have plagued UN operations in the past, and have raised serious questions as to the wisdom of collaborative US military engagement. [Ref. 2]

Equally important is the question concerning the UN's capacity to manage the increasing number of missions in which it is involved. Many feel that the UN is already over-extended with respect to its intended purpose and actual capability. Accustomed to straightforward observation and force separation missions inherent in peacekeeping operations, the UN currently finds itself overwhelmed.

UN "capacity" is largely related to its structure. The Military Staff Committee (MSC) which comprises the lion's share of military operational expertise is stretched beyond reasonable levels, and lacks both the numbers and types of individuals to provide adequate levels of support to UN operations. The MSC was originally envisioned as an international joint staff, which has not occurred due to various command and control considerations. Although some changes have been made concerning short term operational capability, and while other proposals exist to enhance the MSC capability, the operational acumen of the UN remains sub-par. Reorganizing the UN so that it can conduct

the scope of missions in which it currently is involved is a formidable task, in that it requires radical changes in the way the international body plans and conducts peace operations. The process of change is slow, contentious, and often unfruitful. [Ref. 2:p. 49]

b) Non-UN Organizations

Organizations such as NATO, the Organization of African Unity, the Organization of American States (OAS), and the Conference on Security and Cooperation in Europe (CSCE) have previously performed a variety of functions related to peace operations, such as election monitoring. These organizations may also elect to execute military peace operations within their respective areas of inters. Each organization has different operational concepts and organizational procedures. In organizations such as NATO, these concepts are well established and understood by US forces. Other organizations guidelines may not be as well established, or are non-existent. In operations where guidelines do not formally exist, a greater degree of "ad hocedness" will likely prevail.

4. Other Countries

a) Combined Military Forces

Other nations will also send military units to participate in OOTW. It is imperative to understand that each nation has its own political agenda, and will participate with such resources and in such a manner as it deems appropriate. In situations where these other military forces are from those nations with which the US is involved with via treaty, alliance, or standing agreement, building strong working relationships and concepts of operations will not pose as vexing a problem. This will not always be the case, however, and US commanders must plan to operate with unfamiliar partners.

b) Host Nations

Many operations involve host nation requests for assistance. Some do not. Circumstances where there either is no legitimate government, (such as in Somalia), or the actions of the existing government are what resulted in the need for the relief effort, (such as were the circumstances preceding Provide Comfort in Iraq) are likely to occur again in the near future, and must figure into the planning equation.

When a legitimate host nation exists, the perception that the host nation is in control of any sort of relief operation is important for several reasons. First, it restores/reinforces host nation legitimacy in eyes of its population. Secondly, US presence on foreign soil is seldom seen as a "something for nothing" type of situation. Reinforcing perceptions that the host nation has control of the situation will diminish perceptions and misconceptions concerning American colonialist intentions and related animosities. Reactions to American military forces vary regionally, based upon US historical track record. Hopefully, by "working for" a host nation, a less domineering impression will prevail. [Ref. 22]

Coincidingly, US forces must make their intentions and capabilities clear to a host nation. Any assumptions that US military forces are present to rebuild a country's infrastructure must be immediately laid to rest. Lieutenant General Stackpole was quick to point out to the Bangladeshi officials that his force was not there to take over the operation, but to "backbone the governments efforts" until it had restored the infrastructure to a point where it could resume independent operations. [Ref. 22] Additionally, US forces must ensure that whatever capability and resources they intend on introducing into a disaster or humanitarian relief operation will be assets vice liabilities. Recognizing the capability of the infrastructure to support the supporting force is imperative.

5. NGOs and PVOs

Non-governmental organizations (NGOs), private volunteer organizations (PVOs) have tremendous capacity to respond quickly and effectively to emergency disaster relief, food distribution efforts, and other programs aimed at eradicating poverty and vulnerability to disaster. PVOs are increasingly contributing their valuable resources to long-term development plans that are pivotal in improving conditions in the developing world.

US relationships with non-military agencies are a critical pillar of success in OOTW and are based upon the cooperative spirit realized through mutual appreciation of missions, respect, communication and standardization of support.

NGO cooperation with the military, however, is not inherent. These agencies have their own mission and agenda, which occasionally conflict with the mission of US forces. They are historically suspicious of the military, and may question any authoritative actions the military may take.

In anticipation and in reaction to an increase in aviation activity in and around Mogadishu, military representatives (in consultation with others) created an airspace coordination plan to ensure safe and coordinated flight. The plan, when briefed to a number of organizations including the International Commission of the Red Cross, World Food Program, and CARE, encountered significant resistance based not necessarily on merit, but rather on authority. The representative from the ICRC, in particular, challenged the right of the military to organize and impose their will upon civilians. It became apparent that profit margin was influencing rational (or irrational) argument, as the contractors were being paid by the ton of food that they could deliver to Somalia. They were used to operating in a competitively price market and feared that any procedural requirements that precluded direct line of flight from take-off to landing would reduce their earnings. They raised the issue of authority constantly and refused

to acknowledge the right of the military to impose an airspace "order." [Ref. 33:p. 6]

Commanders must consider the presence and capabilities of these organizations and ensure to co-opt their coordination and cooperation via whatever means required. Although NGOs, due to their nature, are occasionally suspicious of military forces. The suspicion will somewhat lessen so long as the military folds them into the operation and attempts to embrace the significant capability NGO/PVOs possess.

E. INTERRELATIONSHIPS

This thesis has established that future US military participation in OOTW will be conducted in coalitions consisting of other nations and organizations. The mechanics involved in building a successful coalition are contentious at best.

1. Complications of Coalitions

Each operation is unique, and the key considerations involved in planning and conducting multinational operations varies per the international situation and perspectives, motives, and values of a specific coalition's members. [Ref. 17:p.VI-1]

US armed forces must be able to operate within the coalition environment, both in a leadership and a follower ship role. Coalitions are typically formed on short notice and can include forces and organizations not accustomed to working together. Establishing command relationships and operating procedures within the multinational force is often challenging. It involves complex issues that require a willingness to compromise in order to best achieve the common objectives. National pride and prestige can limit options for organization of the coalition command, as many nations prefer to not subordinate their forces to those of other nations. The overarching notion critical

in coalition operations is that as long as the coalition members perceive their membership and participation as commensurate with their individual national interests, the coalition has an excellent chance of remaining intact. [Ref. 17:p.VI-2]

The challenge for coalition leadership, whether the US or others, is in crafting the conditions that create and maintain a shared, common direction for all coalition participants. Towards this end, several principles of OOTW are established to help guide the coalition in its decision making. Unity of purpose is the glue that holds the coalition together, as no two nations share exactly the same reasons for entering a coalition or alliance.

2. Principles of OOTW

Modern war is conducted in accordance with several agreed upon principles, appropriately deemed "the principles of war." These principles outline basic precepts which, when adhered to, substantially increase chances of success. Although subtle renditions and variations exist amongst the individual US services, the fundamental thrust and application of these principles remains relatively consistent. There is a similar but different set of principles outlined in recent Army doctrine that delineate common tenants of OOTW. Some apply equally to both conventional operations and OOTW. The remainder, however, are specifically oriented towards the non-combatant nature of many of the types of OOTW. Additionally, as in conventional operations, the weight and appropriateness of a specific principle is situational and will vary between operations. Discussion of these principles, as taken from Joint Pub 3-0, *Doctrine for Joint Operations*, will offer further insight as to the necessary considerations in coalition operations.

a) Objective

Direct every military operation toward a clearly defined, decisive, and attainable objective.

This principle of war applies also to operations other than war. A clearly defined and attainable objective--with a precise understanding of what constitutes success--is critical when the United States is involved in operations other than war. Military commanders should also understand what specific conditions could result in mission termination as well as those that yield failure. JFCs must understand the strategic aims, set appropriate objectives, and ensure that these aims and objectives contribute to unity of effort with other agencies. [Ref. 17:p.V-2]

b) Unity of Effort

Seek unity of effort in every operation.

The principle of unity of command in war also applies to operations other than war; but, in operations other than war, this principle may be more difficult to attain. In these operations, other government agencies may often have the lead. Commanders may answer to a civilian chief, such as an ambassador, or may themselves employ the resources of a civilian agency. Command arrangements may often be only loosely defined and many times will not involve command authority as understood within the military. This arrangement may cause commanders to seek an atmosphere of cooperation to achieve objectives by unity of effort. Military commanders need to consider how their actions contribute to initiatives that are also diplomatic, economic, and informational in nature. Because operations other than war will often be conducted at the small unit level, it is important that all levels understand the military-civilian relationship to avoid unnecessary and counter-productive friction. [Ref. 17:p.V-2]

c) Security

Never permit hostile factions to acquire an unexpected advantage.

In joint operations other than war, security deals principally with force protection against virtually any person, element, or group hostile to our interests. These could include a terrorist, a group opposed to the operation, and even looters after a natural disaster. JFCs also should be

ready constantly to counter activity that could bring significant harm to units or jeopardize mission accomplishment. JFCs should not be lulled into believing that the non hostile intent of their mission does not put the force at risk. Inherent in this responsibility is the need to be capable of rapid transition from a peaceful to a combat posture should the need arise. The inherent right of self-defense from the unit to the individual level applies to all operations. [Ref. 17:p.V-3]

d) Restraint

Apply appropriate military capability prudently.

The actions of military personnel and units are framed by the disciplined application of force, including specific ROE. In operations other than war, these ROE will often be more restrictive, detailed, and sensitive to political concerns than in war. Moreover, these rules may change frequently during operations. Restraints on weaponry, tactics, and levels of violence characterize the environment. The use of excessive force could adversely affect efforts to gain or maintain legitimacy and impede the attainment of both short- and long-term goals. This concept does not preclude the application of overwhelming force, when appropriate, to display US resolve and commitment. The reasons for the restraint often need to be understood by the individual Service member because a single act could cause critical political consequences. [Ref. 17:p.V-3]

e) Perseverance

Prepare for the measured, protracted application of military capability in support of strategic aims.

Some operations other than war may be short, others protracted. Peacetime operations may require years to achieve the desired effects. Underlying causes of confrontation and conflict rarely have a clear beginning or a decisive resolution. It is important to assess crisis response options against their contribution to long-term strategic objectives. This assessment does not preclude decisive military action but does require careful, informed analysis to choose the right time and place for such action. Commanders balance their desire to attain objectives quickly with a sensitivity for the long-term strategic aims and the restraints placed on operations. Therefore, the patient, resolute, and persistent pursuit of

national goals and objectives, for as long as necessary to achieve them, is often the requirement for success. [Ref. 17:p.V-4]

f) Legitimacy

Sustain the willing acceptance by the people of the right of the government to govern or of a group or agency to make and carry out decisions.

This principle focuses on internationally sanctioned standards as well as the perception that authority of a government to govern is genuine, effective, and uses proper agencies for reasonable purposes. Joint force operations need to sustain the legitimacy of the operation and of the host government. During operations where a government does not exist, extreme caution should be used when dealing with individuals and organizations to avoid inadvertently legitimizing them. PSYOP can enhance both domestic and international perceptions of the legitimacy of an operation. [Ref. 17:p.V-4]

3. Other planning considerations

There are a whole host of additional considerations required in OOTW that play a pivotal role in linking the disparate means of a coalition with the commonly agreed upon ends. Military commanders must remain sensitive to these considerations to ensure that military interaction and participation in the coalition environment is as effective and efficient as possible.

a) National Agenda

No two nations enter a coalition or alliance with exactly the same reasons. Each member will participate in a manner and with resources as best suits its interests. The nature of the environment and the nature of the forces arrayed in the environment of OOTW, however, require that consensus be reached on the overarching and commonly shared objectives and goals.

b) Unity of Effort

Motivations of coalition participants may vary, but their objectives can not. Clearly defined and attainable objectives, supported by each member

nation and coalition partner are critical in charting a consistent and cohesive concept of operations. Participants should be assigned missions commensurate with their desires, capabilities and limitations if at all possible.

c) National Communications

Predictably, some forces involved in a coalition will have direct and instantaneous communications back to their respective national political leadership. This link may facilitate coordination and deconfliction of often contentious issues like interpretation of Rules of Engagement (ROE). On the other hand, this same connection may frustrate previously established command relationships, as leadership outside of the operational arena can issue guidance directly to their deployed national forces.

d) Doctrine, Training, and Equipment

Doctrine, force competence as a factor of training and experience, and types and quality of equipment may vary significantly among the military alliances of member nations. Non-military partners may also have equipment and other resources, incompatible with other members. Coalitions which involve members engaged in alliances, treaties, standing agreements, or any other formal arrangement will experience somewhat less of the inherent interoperability problems, but coalition leadership must stand ready to make appropriate adjustments.

e) Cultural Differences

Each partner in a coalition operation has a unique cultural identity characterized by language, values, religious systems and socio-economic outlooks. Seemingly minor issues for one coalition member may have significant importance for another. Certain accommodations are often required to ensure continued harmonious relationships between coalition partners.

f) Management of Resources

The contributions of participants will vary. Some nations may contribute logistically, some militarily, and some both ways. Occasionally, nations may send forces to an operation with no mobility, no sustainability, and little more than their personal weapons and the clothes on their backs. In these circumstances, such forces are liabilities vice assets, and have questionable position in OOTW. [Ref. 22] However, forces require support from either national or coalition resource pools. Identifying requirements well in advance, although difficult, will pay dividends in ensuring that participants have sufficient resources to accomplish the mission. [Ref. 17:pp. VI-3-VI-6]

F. CONCLUSIONS

This chapter has established that the "other than war" environment varies from conventional war in many significant ways, each with important ramifications for US command and control.

The environment is much more political. Coalitions determine the objectives of an operation in any given situation by consensus and cooperation. A full understanding of the political dimensions is required to effectively operate in the OOTW arena. Frequently the lack of political understanding blinds military leaders and planners to the fundamentals of the peace operation. Military decision makers then view changes in missions as diversions rather than as an integral part of peace operations. Without a strategic concept on which to base peace operations actions, the commander may achieve tactical success but increases the risk of strategic failure. [Ref. 19]

The role of military force also changes in peace operations. In conventional operations, military force is often the sole means to an end. OOTW most often involve military forces as part of a broader effort, complementing other political, social, and economic activities. Traditional military functions such as providing

security and protecting the weak remain intact. The C2 challenge, however, is in crafting a concept of operations that allows for complementary, concurrent, and appropriate military action in concert with the other activities.

The cultural, doctrinal and resource disparities present in a coalition are important. Capitalizing on the respective capabilities of each participant requires a sensitivity to and an understanding of their motivation for participating, as well as of the inherent capacity of their resource contribution. US military interaction in the OOTW environment may consist of a unilateral, a leadership, or a supporting role. The latter two require astute political and organizational skills in ensuring that the disparate pieces of a coalition are brought together in a synergistic and complementary fashion. The heightened need for precise linkage between the political ends and the military ends, ways and means is what makes peace operation planning and execution different from war planning and execution. A commonly developed strategic concept provides a sense of unity and a framework for understanding change in a peace operation. The principles of OOTW and other planning considerations outlined in current joint doctrine provide commanders with a thought provoking iteration of the many potential stumbling blocks and necessary planning considerations for coalition operations.

The overarching objective of this chapter was to illustrate many of the adjustments required of the US military mind in order to successfully approach an operating environment for which it is not (typically) specifically trained. US precepts of command and control are built upon a strict hierarchical arrangement, with the commander at the apex of the operating force. OOTW are quite different in that there are potentially several "authorities" who will have certain stipulations as to the manner in which their forces are employed in a particular operation. From the array of various authority represented in a coalition, working relationships must be developed and objectives agreed upon. The commander must fully understand the "authoritative context" within which

their force is employed, as well as the relationship between that force and the other sources of authority represented. The following chapter provides a litmus test, by order of discussion, to assess the degree to which this adjustment has or has not occurred, and the associated reasons.

IV. COMMAND AND CONTROL (C2) LESSONS LEARNED

A. INTRODUCTION

The previous two chapters of this thesis provided the reader both, a perspective in to current US military thoughts concerning command and control, as well insight into the implications of the OOTW environment upon these perspectives.

The purpose of this chapter is to discuss the challenges and impediments a Joint Force Commander may experience in his attempts at transforming the necessary adjustments, as derived from the previously mentioned implications, into physical reality and applying it to coalition command and control. These issues and challenges represent an aggregate of both historical and potential considerations, as well as lessons learned from recent US and coalition experience in operations other than war. From this discussion, the thesis will then make appropriate conclusions as to what is needed to remedy any noted deficiencies.

The chapter will break this discussion of challenges and impediments into three sections: C2, intelligence, and communications. This presentation follows a similar format established in Chapter II, where the baseline definitions for command and control were initially presented.

B. DOCTRINE

There is, as of yet, no commonly agreed upon doctrine for coalition building in the OOTW environment. Some may argue the need for such a foundation.

The reality, however, is that until a common approach is formulated, coalition participation will remain largely ad-hoc.

Joint operations, in and of themselves, represent greater challenges than single service operations. The Joint Chiefs of Staff is still trying to produce the doctrinal foundation to unite joint forces in warfare. Combined military operations involve the problems of joint warfare, as well as the added complexities created when two or more national armed forces bringing their distinctions and peculiarities to the coalition. [Ref. 34:p. 59]

This path of logic taken one step further captures the essence of OOTW. Factor into the coalition calculus the problems inherent in combined military operations (possibly increased by several orders of magnitude), coupled with the variety of non-military organizations and agencies who may lack familiarity with the way the military conducts business (and vice versa), plus the use of military forces in a relatively unrehearsed role such as is presented in many OOTW, and the implications for complexity and the need for common doctrine are clear. The need and the feasibility of developing it, however, presents an interesting dichotomy worth further discussion.

Outlining the difficulties the US is experiencing in bringing all services on board with joint doctrine illustrates the difficulty in achieving the common framework desired. For example, command and control is arguably the most important yet least understood aspect of military operations. US military doctrine, across the strategic, operational, and tactical strata hinges upon the efficacy of its command and control doctrine. However, a cohesive perspective of command and control does not yet exist between all of the US military services. [Ref. 5]

The origins, appearance, and implementation of US command and control, as discussed in Chapter II, rest atop a historical, and pyramidally structured set of building blocks. The attempts to synergize and streamline the services, while increasingly successful, have not been easy. Issues ranging from roles and

missions to the development and implementation of joint doctrine continue to fester, and predictably so.

Much of this stems from very different and well known institutional concepts. Varying service views and perspectives on their respective contributions to national defense and on service perspectives concerning command and control are well documented in the existing body of literature. Many experts have exhaustively dialoged the nuances of each service and their historical origins and cultures. [Ref. 35] While this thesis will not strive to further develop the historical reasons for these different views, a brief trace of the roots of the existing state of jointness is required for further discussion.

The disastrous Iranian Hostage rescue mission and the imperfect invasion of Grenada spawned the call for military reform, based upon charges that the failures were largely the result of the services not working together. Critics also cited many incidence of "counterproductive parochialism" that further contributed to lack of US military synergism. The services developed weapons without regard to interoperability with other services, Army and Navy communications systems could not talk with one another, heavy equipment was acquired that could not be loaded on certain cargo aircraft, and each service had its own doctrine for employing air assets. [Ref. 36:p. 71]

The Defense Reorganization Act (Goldwater/Nichols Act) of 1986 was intended, not to erase service personality, philosophy, or culture, but rather to mold the unique characteristics and strengths of each service to create a complementary situation where the capability of the whole was greater than the sum of the parts. Subsequent lessons learned by US forces in the joint ventures of Operations' Just Cause and Desert Shield/Storm present a mixed review of whether or not this goal was achieved. Although improvements have occurred, much work remains in order to ensure that Armed Forces can operate together. This is understandable, in that, until recently, the impetus for change has

remained sub-critical. After all, although less than painlessly and far from perfect, the "old" command and control structure was adequate to win the Cold War. [Ref. 36:p. 71]

The era of jointness is new and different. Everything, from the way US forces are structured for combat to the nature of the threat has changed. The structure implemented by Goldwater-Nichols is, as of yet, immature. Further, the process involved in developing joint doctrine requires significant compromise on the part of all involved. Consequently, the current template that is the product of joint doctrine development suffers from both the fact that it does not fully accommodate the cultural differences between the services, and, as a result, has not yet had adequate time to take root and replace historically solidified service unique methods and procedures. [Ref. 36:p. 71]

Predictably, many contentious doctrinal issues rooted in historical precedent and misdeeds continue to thwart acceptance of common joint doctrine, (USMC/USAF contention over the Joint Force Air Component Commander (JFACC) concept is but one example.) More frequent joint exercises and forced interaction will continue to smooth the future road, but it will require significant patience and compromise from all parties. The current competition between the services for dollars and missions in these days of rapidly declining defense budgets further contributes to a sub-optimal cooperative atmosphere. In sum, a "joint strategic paradigm "has yet to emerge in the years since Goldwater-Nichols. [Ref. 6:p. 254-258]

US joint capability is increasing through continued participation in joint exercises and education and by building upon the lessons learned during the Gulf War (as well as the myriad of joint and combined operations since). However, the lack of a "joint paradigm" compounded with the prevailing atmosphere of competition, presents significant implications for command and control of US forces. The difficulties the United States services have had in

creating a common doctrine, despite sharing common culture, language, and political leadership provide the reader with a perspective on the dilemma inherent in creating an all encompassing approach for coalitions as diverse as those typically formed in OOTW.

The challenges resulting from the lack of common doctrine, however, are pervasive. As described by General Robert RisCassi:

> Doctrine is more than simply how we intend to fight. It is also the technical language with which we communicate commander's intent, battlefield missions, control measures, combined arms and joint procedures, and command relationships. Doctrine is not contained simply at one level of war-strategic, operational , or tactical- it embodies all. Campaign execution demands that these levels of war become inextricably linked...In the absence of a commonly understood doctrine, it becomes extraordinarily difficult to plan or execute military operations. [Ref. 34:p. 60]

The remainder of this chapter will discuss those challenges related to the planning and executing operations other than war.

C. POLITICS

1. Coalition Political Dynamics

> When inter-allied factors are superimposed, the effects are frequently unpredictable. Politics are politics the world over and many times we encounter difficulties and objections which are illogical from the military standpoint but which stem from political factors that are very real to the officeholders, the voter, and taxpayers of the countries concerned. It is to be expected that we will frequently encounter problems of obscure and puzzling origin, and an awareness of the probability should help to foster the patience and flexibility necessary. [Ref. 37:p. 2-44]

The effect of politics upon military operations can not be overstated. Military action supports political objectives. Strategic aims and operations that follow are an extension of politics. Further, coalitions are political arrangements among nations with recognized common interests. [Ref. 30:p. 37]

Joint task force leadership must have a knowledge and appreciation of the economic, political, diplomatic and informational components of national security in a given situation as it applies to the United States, as well as an understanding of the political dynamics between and within the disparate nations, forces, and organizations involved in OOTW. [Ref. 38:p. 3] Full recognition of the dimensions of US policy in a given situation will also both encourage the commander to use the authority with which he is vested, and will facilitate a greater degree of "incident free" dealings with the wide array of coalition participants, by mitigating the chance of perceived slights or insensitivity's on the part of the US. [Ref. 39]

2. Unity of Purpose

Those who contribute forces and resources to an operation agree that there is some value in doing so. However, no two organizations enter a coalition under the exact same pretenses. Every participant has a unique political agenda and will contribute in a manner most suitable to its interests. This sometimes parallels the interests of the US, but not always. Compromise and agreement on an operation's overarching purpose and objectives are the initial steps in molding coalition efforts.

Unity of purpose is the glue that holds coalitions together, and will ultimately make or break the success of the operation. Common objectives both ensure coordinated efforts and restrict action by participants. For example, the coalition objectives in the Gulf War were used to eject Saddam Hussein from Kuwait. The common, albeit limited, objectives constrained commanders whom may have otherwise sought total defeat of Iraq. [Ref. 30:p. 37]

The primary difficulty with US involvement in coalition operations, however, involves its historical willingness to "talk the coalition talk," but reluctance to "walk the coalition walk". Often, US actions belie the fact that it does not fully understand the dynamics of coalition operations.

LtGen. H.C. Stackpole III captured this notion in his observation that :

> ...We really don't think coalition. [We] have a tendency to go into a situation and say, "We'll run everything...we'll do everything." The coalition is an afterthought to give us a sense of legitimacy in the international eye. [Ref. 22]

The reason for this mindset is at least partially embedded in tradition. US leadership is a historically ingrained proposition in many situations. Although the trend is towards collective response, much of the burden for major military endeavors continues to fall upon the United States. Only the US has the where with all and resources with which to conduct large-scale, unified actions. Hence, US military commitments are often both prerequisites and catalysts for many nations. The amount of leverage the US has in determining the coalition's purpose, however, has irrevocably changed with the end of the Cold War. [Ref. 30:p. 37]

During the Cold War, America was the clear leader and set the agenda which others followed. Western nations largely shared the US vision and accepted US lead. Furthermore, as the US provided and controlled the preponderance of forces, missions could be married to political objectives. Mission creep was therefore totally within US control. Furthermore, the United States tackled the big operations, from Korea to Kuwait, which were the real coalition wars. The United Nations got lesser countries to handle traditional peacekeeping operations. The UN role in American led coalitions was limited to a stamp of legitimacy. [Ref. 25:p. 26]

The end of the Cold War and aforementioned precedent for collective action changes the rules. UN expansion in more "muscular" peacekeeping and other non-traditional types of operations will further alter the coalition dynamic. It is unlikely that our coalition partners and the United Nations will allow us to lead as before, despite the fact that many old friends continue to wait for the American cue prior to committing forces to an operation. [Ref. 25:p. 27]

Maintaining unity of purpose also requires an iterative, evaluative process that will allow the coalition to collectively adjust its objectives to a situation's certain to change circumstances. The shift in objectives may be deliberately factored into a coalition's phased campaign plan, or may be altered if the circumstances require. Recent experience in OOTW has provided examples of how the mandate may shift in either a planned or ad-hoc fashion.

A Joint Force Commander exists in the realm of the operational level of conflict. In this role, and in the way of an oversimplified description, he is charged with translating strategic guidance into tactical objectives for forces under his purview. it is important for him to recognize and understand the implications that the strategic interests and agendas of the other participants have upon the viability of the coalition and hence its chances for success. In the OOTW environment, as the NCA's "on scene" representative, the JFC may also play a key role in determining the mandate, based upon a concurrent assessment both of what is required and what is accomplishable, in concert with other coalition leaders.

The lessons learned in the transition from UNITAF to UNISOM II clearly illustrate this. Great care was taken to develop an approved, well-defined mission with attainable, measurable objectives prior to the commencement of UNITAF's endeavor in OPERATION RESTORE HOPE. Disarmament was excluded from the mission because it was perceived as neither achievable nor prerequisite to the crux of the mission of providing a secure environment for relief operations. Discretionary "disarming as necessary" became an implied task which led to the confiscation of heavy weapons and gave UNITAF the authority to conduct weapon sweeps. The more ambitious "nation building" agenda of UNISOM II, however, mandated to go to the causes, rather than the symptoms of the crisis, proved to be seriously weak in the same manner that RESTORE HOPE was strong: its objectives were vaguely defined, and its results

are difficult to measure. In both cases, it appears that those close to the operation had a significant role in voicing what should and should not be coalition objectives. At least part of the question surrounding the difficulties experienced in UNISOM II is, "Does the mission meet the "do-ability" criteria?" Can peace be imposed on a reluctant and notoriously proud population at gun point and the "social fabric" of their nation be re-woven together at the direction of outsiders? [Ref. 40:p. 58 and Ref. 23:p. 67]

Once the overall direction and mandate of a coalition is developed, the specific milestones required to arrive at the end state must be determined. As witnessed in UNISOM II, this is not always successfully accomplished. The Italians, for example, who have historic reasons for understanding Somalis better than most, differed severely with UNISOM, concerning the use of force, and limited their participation in the operation accordingly. [Ref. 23:p. 68] Reaching agreement on the operations objectives will facilitate organizing appropriate forces and resources with which to accomplish the objectives.

What makes peace operation planning and execution different from war planning and execution is the heightened need for precise linkage between the political ends and the military ends, ways and means. It is particularly important that the strategic concept established in the common objectives provide a sense of development and a framework for understanding change in a peace operation. Frequently the lack of political understanding blinds military leaders and planners to the nature of the operation. The result is that mission changes are viewed as diversions rather than an integral part of the solution process. A coalition that lacks a strategic concept on which to base its actions may often achieve tactical success but increase the likelihood of strategic failure.

D. RULES OF ENGAGEMENT

Consistently applied rules of engagement (ROE) are an essential element of an operation's success. Developing rules of engagement in OOTW is a complex and often times contentious process. ROEs, unlike the laws of armed conflict, are promulgated through layers of military and political filters that regulate the application of force. The rules are self imposed, and situational, and consequently leave wide latitude in their scope, duration, intent, and interpretation. [Ref. 41:p. 21-22]

Rules of engagement, in any sort of operation, have four fundamental functions:

- ROEs serve as a guideline to help maintain the peace during a transition to war, i.e. as a guard against inadvertent escalation and a safety measure for personnel.
- To control combat operations during wartime, ROEs serve a political purpose by ensuring that the military force follows the directing authority (i.e. the UN or NATO).
- ROEs serve a military purpose by safeguarding military personnel through minimizing escalation and increasing the effectiveness of the operation.
- ROEs serve a legal purpose by ensuring that those participating in the OOTW follow international law in the execution of their duties. [Ref. 42:p. 28]

Consistent interpretation of ROE by all coalition members is imperative. There are many obstacles in ensuring this occurs. For example, ROE for PROVIDE COMFORT were developed by the US European Command, with JCS approval. Each coalition military force deployed to support the operation had its own ROE. Usually, these forces adopted US ROE. Some did not, however, and used an ROE more restrictive than the US ROE. This is dangerous, in that it creates a situation where coalition members respond to situations in a different

manner, potentially creating the perception of bias or partiality. It also effects a coalition force that is integrated to accomplish the assigned mission.

French ROE, for example, allowed a French infantry platoon to fight for an individual coalition soldier who may be under either Iraqi or Kurd attack. However, the same infantry platoon could not aid another coalition platoon under attack.

British employment of artillery had similar problems. The British national ROE would not allow the deployment of the 105 mm Howitzer battalion, positioned at the forward operating base in Turkey, into northern Iraq to support coalition or even their own forces. The British government believed that the humanitarian nature of the operation precluded the need for such weapons. The hostile activities of the Iraqi military created an additional need for fire support assets. The Turkish ROE, however, would not allow the British artillery battalion to deploy to firing positions inside Turkey to shoot fire missions in support of coalition forces in northern Iraq. The personal relationship between the CTF and British commander was essential in securing Britain's approval to deploy the artillery into northern Iraq.

The example of the Royal Netherlands Marine battalion deployed as part of the British 3rd Royal Marine Commando Brigade provides an even more contentious set of circumstances. Combined Task Force PROVIDE COMFORT was not a NATO command structure, but a coalition of thirteen nations. The Netherlands commander had to first work through the Dutch government and then through the British Military to adopt the US rules of engagement. [Ref. 43:p. 20]

In Somalia, the ROE depended upon the perceived threat and proportional response. Although contingents responded within the ROE, there was a great deal of variation in interpretation. The Pakistani forces were notorious for their more brutal responses; the Belgians believed in "smacking the people and then

feeding them'; and the Italians were frowned upon by the remainder of UN forces for their soft treatment of the Somali people. [Ref. 44:p. 14]

Consistent interpretation is achievable provided the "lead" force can submit recommended ROE through diplomatic channels with sufficient lead time to allow participating nations the opportunity to suggest modifications required to allow their force's participation in the operation.

E. FORCE INTEGRATION

Establishing unity of purpose and identifying coalition objectives and end-states are important aspects of OOTW. Sequentially, the next step involves obtaining and structuring appropriate forces for the mission. This may present some contentious challenges.

1. Force Structure

Compounding the numbers of complicating issues already discussed, is the fact that the forces arrayed for any particular operation other than war must be tailored specifically for the operation. There are several complicating factors in achieving the appropriate force balance to engage in OOTW.

Where US forces are concerned, a principle complication involves the absence of a common approach to providing forces for a contingency. There currently is no precise formula for organizing Joint Task Forces (JTFs), and specifics will vary per the situation. Varied service attitudes concerning the employment of combat power continue to impede the development of a standard approach to operations. Procedures, policies, and practices differ from one unified (or sub-unified) commander to the other, a pattern that will logically follow for future JTF commanders, who are taken from any of the Services. Although each geographic region and each situation for which a JTF is established

possesses both unique circumstances and requirements, the paradigm for exercising command and control should be shared.

Joint Pub 5-00.2, Joint Task Force Planning Guidance and Procedures supports structuring JTFs around service components such as a numbered fleet, wing, or expeditionary force, as was the case in RESTORE HOPE and DESERT SHIELD/DESERT STORM. The unity of effort and efficiency present in an existing staff with established operating procedures, previous training, and common doctrine are advantages in both the rapidity in which the staff can assimilate the responsibilities inherent in coalition operations, as well as in the amount of resident and known expertise available to the commander to compensate for any shortcomings in reference to other service capability. Other structural arrangements may hinge upon geographical arrangements such as were utilized in PROVIDE comfort when JTF Alpha was created for Special Operations Forces at Kurdish relief camps in the Turkish mountains, and JTF Bravo was established to secure and resettle Kurdish refugees in northern Iraq. Logically, the nature of the task should dictate the identity of the JTF commander as well as the composition of the force. There are, however, certain vulnerabilities in ensuring that appropriate forces with requisite capabilities are included in a force. [Ref. 30:p. 37]

The JTF composition process and command structure is not standard between unified and specified commands. The manner in which a JTF is structured is largely a factor of CINC discretion, and although a JTF commander may have some degree of latitude both in requesting particular forces and in constructing his staff, the theater force structuring paradigms will effect a JTF staff composition and potentially, quality. Establishing a JTF involves many variables and is a complex undertaking. During the crisis or deliberate planning preceding force deployment, a number of concurrent staff actions and higher echelon decisions effect JTF force composition. The JTF commander has varied

latitude in selecting forces for a task force. Through an interactive process involving the unified and specified commands, the Joint Staff, and component commands, the JTF is provided with appropriate resources to maximize its potential to quickly and effectively accomplish its assigned missions. [Ref. 39:p. 10]

The greatest impediment, however, in appropriate structuring and employment of joint forces lies in the level of understanding that the commander has as to the range of capabilities of the other services. Joint Force Commanders are typically extremely well versed in the capabilities of their own services, and may understandably tend to use those capabilities they understand best. While JTF commanders usually use the best forces for the job, this is not always the case. [Ref. 39:p. 16]

Joint operations succeed or fail as a function of the level of understanding of what is in the "joint toolbag" of a joint task force, and how to best apply it. Combining the contributions of air, land, sea, space and special operations forces does not happen in isolation. Each capability is important, and given appropriate circumstance, any dimension of combat force may dominate. The JTF commander must tailor and select forces to most efficiently and effectively accomplish the mission. Failure to do so at worst reduces the force's chances for success and at best increases the amount of effort required to accomplish the mission. Fitting the right joint package to a mission and threat remains the key to success in contingency operations. [Ref. 38:p. 3]

The commander of JTF Proven Force, then Major General Jamerson, quickly ascertained the need for Army Patriot units to defend Incirlik air base (in Western Turkey), SOF forces for combat search and rescue (CSAR) missions, psychological operations (PSYOPS) specialists for operations against the Iraqi military, and a Joint Information Bureau (JIB) to respond to the media. The commander included specialists in these areas on his staff from the onset, which

enabled his force to start quickly and sustain effective combat operations. These advance efforts enabled the task force to begin flying combat missions against northern Iraq from an appropriately defended base with CSAR capability, directly upon receiving permission from the Turkish government. [Ref. 39:p. 16]

Smart JTF headquarters staffing may also counterbalance, to some degree, a commander's lack of interdisciplinary acumen. A commander who surrounds himself with subject area experts from the other services will create his "window" into service unique capabilities and limitations. The manner in which a particular JTF is structured will dictate, to some degree, the nature of the staff. Recognizing a recurring need to fill critical gaps in staff expertise, most CINCs have developed staff augmentation cells of one variety or another. The CINCPAC Deployable Joint Task Force Augmentation Cell is but one example of how a JTF staff may develop required aptitude to function in a coalition environment.

The Deployable Joint Task Force Augmentation Cell (DJTFAC) provides responsive joint staff expertise, crisis action, and normal joint staff planning to a designated CJTF. DJTFAC members are integrated fully within a JTF staff, and are not intended to be separate from the JTF staff or a forward echelon of the USCINCPAC/Service component staffs. DJTFAC normally consists of 26 personnel from HQ USCINCPAC and on island component staffs. It is a multi service, multi disciplined organization tailored to meet CJTF needs. DJTFAC members should have specific knowledge of crisis action planning, as well as in-depth knowledge concerning specialty, service, and staff areas. [Ref. 45]

2. Force Composition

Although one may expect that a large number of participants in the coalition is desirable. the opposite is often true. Balance and quality of forces is a much more important factor. There are, in fact, significant disadvantages unmanaged growth in a coalition.

As the number of contributing countries increases, there is a commensurate increase in the amount of policy guidance coming from the top. The on scene commander, consequently, has less flexibility in executing appropriate guidance. In other words, as more nations join the coalition, their contributions bring with them more and more constraints, restrictions, and special requirements. [Ref. 42:p. 26] This requires a significant adjustment on the part of a US commander who may be accustomed to operating in the relative ease of the realm of unilateral action.

Further, the fragility of the target environment may require that coalition forces maintain a minimal footprint within a host nation. The delicate environment in many crisis situations, especially disaster assistance and humanitarian relief operations, requires a minimal "assisting" footprint to abate the impact on the host nation infrastructure. Excess resources may not only reduce the positive impact of a force, but also anger a host nation if a coalition's assistance is perceived as a liability.

The JTF commander for OPERATION SEA ANGEL expended considerable effort in convincing a wary Bangladeshi government that the forces and resources he was introducing into country were assets that would not put unbearable stress in the extremely fragile environment that existed in the aftermath of the typhoon. In order to ensure that this was the case, the commander not only limited the "permanent" footprint of his force to no more than 500 people on land at any one time, but he also had to order some components to retract some of the unsolicited resources they had provided, as well as issue a standing order to refrain from sending any further resources to the area of operations unless he specifically requested it. [Ref. 22]

Other methods of "managing" the nature and size of the coalition were used in Somalia. The US recognized that the operation would be conducted under UN auspices and that legitimacy required the involvement of the

international community, to include participation by Somalia's African neighbors with similar regional interests, as well as by both middle East and Southwest Asian countries who shared cultural and religious affinities.

The overwhelming number of nations offering immediate military support, however, threatened to surpass the coalition staff's capacity to orchestrate the operation. To handle the vast number of offers, CENTCOM headquarters screened each offer and retained approval authority in order to ease the load on the UNITAF staff. The capabilities of contributors-including self sufficiency, mobility, and willingness to adhere to American operational control and rules of engagement- were weighted against the operational and political requirements of the mission. To facilitate the screening, CENTCOM developed a questionnaire which was disseminated by the State Department via Defense Attaché's. Those nations wishing to participate returned the completed questionnaires via diplomatic channels. [Ref. 40:p. 61] The difficulties of command relationships are more fully developed in the following discussion.

> We need to identify countries that are willing to sign up at the first sign of disaster to provide a medical unit, motor transport unit, military police units, things of that nature where each country can contribute according to their ability to give and be coordinated with the effort rather than throw all organizations in there that do not have any kind of interactive capability whatsoever, so you assign them a sector and hope that they do something. [Ref. 22]

F. COMMAND RELATIONSHIPS

Another crucial challenge for a JTF commander lies in merging dissimilar forces into a synergistic and seamless organization. Given the potential cultural, political, and doctrinal differences between participants, this is a monumental, yet critical undertaking. The nature of the coalition will determine the nature of the working relationships established. Coalitions are linked together in a variety

of ways, both formal and informal. Coalitions involving allies may very well involve previously existing formal agreements or treaties that help guide the coalition command hierarchy. Such existing agreements, although helpful, will not fully alleviate problems in this area, especially in coalitions that involve the diverse array of participants experienced in recent OOTW. Whatever the method of bounding, streamlined and direct command and control relationships are absolutely vital in orchestrating the efforts of a disparate coalition towards a commonly defined objective.

As summarized by LtGen. H.C. Stackpole III:

> Experience proves that a single headquarters- representing all the military, diplomatic, private, public, national and international agencies involved- must provide central control for disaster relief. Otherwise, dispersion of authority will cause both duplication of effort and tragic omissions Yet, at the same time, the military must remain sensitive to the particular interests and contributions of all. [Ref. 28:p. 20]

Due to the consequences inherent in employing military force in an environment, relinquishing national command and control of forces is an act of trust and confidence unequaled in relations between nations, and between nations and organizations, as in applicable in such cases that involve the United Nations. Chapter II established that US command and control philosophy was heavily based upon the fundamental principle of unity of command. Many in the military contend that unity of command is an essential element of a successful coalition. As written in one prominent journal of military thought, "Unity of effort in combined operations demands that coalitions accept unity of command." [Ref. 34:p. 67 and Ref. 30:p. 37]

Where "command" relationships apply in a coalition, it is imperative that authority match responsibility. Compromises must not outweigh mission requirements. When political complications prohibit proper assignment of authority, operational design and responsibility must be altered accordingly. [Ref. 34:p. 67]

Admittedly, unity of command logically simplifies many aspects of manipulating such a large and complex organization as an OOTW coalition. Yet has unity of command truly been achieved? Moreover, is it achievable or even required? The answers to these questions depend upon what degree of command unity is required for one to consider it accomplished.

Unity of command, in an absolute sense, was not achieved in any of the three scenarios of primary interest in this thesis. During PROVIDE COMFORT the Combined Task Force (CTF) commander was successful, despite resistance from some nations, in persuading contributing nations to place their forces under his tactical command. US Navy command relationships to the CTF were not the same as for the other services, or international forces. The Navy command remained under control of the US European Command, and coordinated with the CTF to provide required air support. [Ref. 46: p. 18] During OPERATION SEA ANGEL, most military forces subjected themselves to the operational control of the JTF commander. The Indians and the Chinese, however, were active participants, but due to political considerations, coordinated with the coalition, and contributed in a fashion consistent with their respective national interests. [Ref. 22] OPERATION CONTINUE HOPE had even less unity present in its command structure. The relationship of the Special Operations Forces to the rest of the coalition is but one example of a complex and convoluted chain of command involving UN, and unified commander tiers of authority. US logistics and command and control organizations were under UN control through Major General Thomas Montgomery, who was dual hatted as the deputy UN military commander and as the UN Force Command deputy. The rangers that arrived in late August brought their own command system and reported directly to US Central Command in Tampa. [Ref. 20:p. 12]

The premise that unity of command is essential to achieving unity of effort also ignores many realities present in the coalition dynamic. Recent experiences

suggest that the principle of cooperation, consensus, and coordination (CO^3) may more accurately reflect the prerequisite mentality that coalition members need to achieve unity of effort. Achieving cohesion in a coalition environment entails consensus, cooperation, coordination on the part of all participants, vice strict authoritative relationships.

To begin, many participants in OOTW do not subscribe to and are not subject to a chain of command. Many NGOs and IOs are historically suspicious of the military, which may result in tenuous initial working relations. This matter was vividly illustrated during the initial stages of OPERATION RESTORE HOPE.

In preparation for the ensuing onslaught of military forces and additional relief operations, US military representatives established a plan to de-conflict the increasingly congested skies above Somalia. The subsequent brief was not well received by many civilian participants, some who continually questioned the military's right to "organize and impose their will on civilians." Contributing to this mindset was that agencies contracted by the relief agencies were being paid by the ton of food that they could deliver to Somalia. These contractors are often used to operating in a competitively priced market and were concerned that their profit margins would suffer if procedural requirements forced them to fly other than a direct line from take off to landing. Several organizations raised the issue of authority constantly, and refused to acknowledge the right of the military to impose an airspace order. [Ref. 33:p. 5]

The individuals who gravitate to the NGO profession are "more likely to be people more prone to the Peace Corps than the Marine Corps." They are generally more prone to seek consensus than the average military person, and will not understand military institutional cultural norms any more readily than service members will understand theirs. The potential for friction is high, unless both sides make a determined effort to overcome such prejudice in order to get the job done. [Ref. 47:p. 42]

The contributions of non-military organizations and agencies, however, are critical, and cooperative relationships work well. In SEA ANGEL, the JTF coordinated its efforts with the Department of State and the Agency for International Development with which memoranda of agreement existed. Ad hoc relationships are also effective. An effective division of labor was created among the International Red Cross, Red Crescent, CARE, Save the Children, and other relief agencies.

Military forces took advantage of experts from within host countries and US State Department. USAID disaster relief experts were on the scene in Bangladesh acting as key advisors, and played a similar role in Northern Iraq. "We've never done an operation like this with the military before," said Donald M. Krumm, head of the State Department's Emergency Refugee Program, alluding to the new, but effective working relationships established with the military. The contributions of these organizations were critical in mission success. [Ref. 27:p. 16]

While many relief agencies avoid the appearance of formal relationships with the military, there is an inextricable dependency between the two. The relief agencies have the relief to provide, and the military has the ability to provide the security and logistic support required to provide it. These relationships are based upon mutual need, trust, and respect, vice any type of authoritative context, and have proven adequate in most situations. [Ref. 30:p. 38]

Over fifty relief agencies were providing assistance to the Kurds during PROVIDE COMFORT in Turkey, Iran, and Iraq. There efforts, however, were not coordinated and the lack of coordination reduced their combined effectiveness. The military's organizational structure, size, resources and ability to plan and execute large scale operations makes it particularly well suited to assume the coordination role. [Ref. 46:p. 28]

Finally, many nations are reluctant to place their forces under the command authority of any other nation. The aforementioned "come in and take charge" attitude that pervades the US military mindset does not do much to ease this reluctance. There is an overriding concern among many countries that they are not going to "look good" or are going to be outshone by US forces. These concerns are often shared by host nations. As adjustments are required in a situation, the perception is that the US expects to be adjusted to and that coalition partners must adopt US procedures. Regardless of generally superior US command and control capability, the jealousy and mistrust this creates among other coalition partners is significant. [Ref. 22]

The ramifications of other nations' and organizations' perceptions concerning US attitude are significant, and US commanders must do their utmost to ensure that negative perceptions are minimized.

The primary reason US forces fall into this pitfall is a general lack of understanding of the capabilities, limitations, and sensitivities of coalition partners. In addition to the political agendas, all participants bring unique capabilities to the coalition that are necessarily considered in the course of establishing command and control relationships that provide requisite synergism. The US simply does not know its partners well enough.

A greater level of understanding of these characteristics of coalition partners would facilitate greater and more rapidly deployed coalition capability, as partners could plan, train, and, to a limited degree equip themselves with respect to the capabilities of others. [Ref. 22]

The problems in establishing "working relationships" may be partially ameliorated by developing a concept of operations that provides coalition partners with the greatest opportunity to achieve success. In addition to the distinct political agendas, all participants bring unique capabilities to the "playing field" that are necessarily considered in the course of constructing operational

objectives and courses of action, as well as in establishing command and control relationships that provide for an appropriate level of synergism. Several general considerations guide this process.

To reiterate, the major impediment in accomplishing this arrangement lies in identifying the capabilities and limitations of coalition partners and subsequently training towards that end. As in the joint operating environment, it is imperative that commanders understand the capabilities and limitations of all coalition forces. Coalition leadership must ensure that participants are assigned missions that best adhere to their capabilities and political desires, and that provide them with the best possible chances of success.

Moreover, "tactical" assignment should optimize multinational force strengths and avoid duplication or degradation of unique capabilities. During OPERATION PROVIDE COMFORT, the British 40 Commando unit, fresh from a tour in Northern Ireland was assigned the mission of clearing Iraqi secret police out of the northern city of Zakhu. Explosive Ordinance Disposal teams (EOD), medical, and a variety of other units also were contributed by several nations, and assigned missions commensurate with their respective strengths. [Ref. 48]

Likewise, coalition forces must compensate for vulnerabilities among partners. NGOs, for example, often require different types of support, such as communications, logistics, etc. to effectively integrate them into a coalition and capitalize on their substantial capability.

There are various ways to accomplish this objective. For example, an area of operations may be "sectored", assigning independent sectors of operations to specific countries. Forces are normally more effective if employed under commanders from their respective nations. Doctrine, language, and equipment commonality and interoperability are also advantages to establishing sectors. [Ref. 49:p. 41]

> When you are able to establish sectors, you are showing confidence in the organization that is there. You are allowing them a piece of the action that is commensurate with whatever their input is. [Ref. 22]

In contrast, *integration of forces* is often required to accommodate functionally, vice geographically oriented command relationships, to make necessary political concessions, or to compensate for homogenous force shortfalls.

French participation during Provide Comfort is illustrative of a "political" accommodation. France, as a sovereign nation, sent a brigade to operate **independently** in Northern Iraq. The French eventually agreed to operate under TACON under US forces, with the conditions that they not be placed subordinate to the British, and that other allied forces be assigned under French control. This operational relationship was highly successful and presents a viable model for relationships in similar situations. [Ref. 24:p. 17]

Assigning responsibility for specific sectors, however is favored over integration by many senior US military leaders because integration requires, "...the process of cross cultural identification and it takes time to do that. In a crisis situation you don't have time to do that." [Ref. 22]

Sectors also allow nations that are not part of the coalition, due to political or other reasons, to make contributions to the overall effort. As mentioned, the Chinese and Indians were not part of the Sea Angel task force because of political concerns. They provided a significant amount of aviation relief support in geographic sectors that were far enough away from the rest of the coalition effort to automatically de conflict from ongoing coalition activities.

G. CONCLUSIONS

This chapter presented a discussion of the pertinent C2 issues that challenge or impede coalition efficacy in operations other than war. The difficulty that a joint force experiences in developing a common frame of

reference, as previously discussed, would lead one to logically conclude that a multinational, multi-organizational coalition will experience problems of significantly broader scope and greater magnitude. There are a number of challenges and issues involving command and control of coalition forces that face a JTF commander in OOTW, many of which parallel, yet exceed those found in a joint setting. A full understanding of the dynamics and resulting pitfalls involved is essential in ensuring optimal employment of US forces. There are several significant challenges to accomplishing this monumental achievement.

The first, and perhaps most serious challenge is the current lack of a common doctrine. Doctrine plays a critical role in establishing the procedures and methodology with which participants will approach a given situation. Developing such doctrine, however, is certain to be an arduous task. The problems experienced by the US military in developing joint doctrine for forces that share a common language and culture, allude to the degree of difficulty in blending multinational and multicultural perspectives into a cohesive framework. The lack of framework has important implications for the manner in which coalitions tend to conduct operations.

Every facet involving the conceptual issues of coalition command and control is politically and cooperatively driven. The US has relinquished the monopoly, perceived by some, in setting the mandate, objectives, and command relationships in the coalitions of the New World Order. Current world perceptions regarding the link between true collective action and the resulting legitimacy it lends, do not allow the US the same dominance it enjoyed during the Cold War as regards coalition decision making.

Further, it appears that the nature of the OOTW environment and the large and disparate numbers of partners render traditional US perceptions concerning the nature of command somewhat less valid. Doctrine and training focused largely upon joint operations as well as previous precedent have developed a

somewhat myopic US mindset concerning the nature of command and control in OOTW. The US is accustomed to leading. The manner in which it can lead, however, is changing.

There is little argument that operations where the principle of unity of command is achievable will enjoy certain advantages over those operations where it is not. One commander and one chain of command facilitates direct and easy two way command, control, and communications. However the notion that unity of command is essential to successful coalition operations ignores the evidence, as well as the fundamental characteristics of OOTW.

True unity of command, even of all military forces did not exist in any of the three operations of focus in this thesis. Furthermore, the non-military organizations and agencies who played critical roles in these operations were not subject to "command" authority by the military hierarchy present. These organizations occasionally lacked organization and focus, but through various mechanisms and methods of coordination, however, they were blended into appropriate and productive roles within the coalitions, conducting operations concurrently and complementary to military operations.

Despite the lack of unity of command, the coalitions arrayed for OPERATIONS SEA ANGEL, PROVIDE COMFORT, and RESTORE HOPE all made significant contributions to the relief of human suffering. Yes, there were problems and inefficiencies. No, the final word as to the stability, durability , and desirability of the achieved end states in the latter two of operations has not been said. What is clear, however, is that comprehending the complexities of coalitions and successfully orchestrating coalition operations, requires a unique combination of military and political skill. What is not clear, is whether current perceptions concerning command and control provide the most effective vehicle by which to orchestrate coalitions in OOTW.

As previously established, there is no common doctrine for conducting coalition operations in OOTW. The lack of a common approach has resulted in an ad-hoc approach, using existing doctrine, due to lack of any other guidance. The doctrine being used, as it is not specifically tailored for coalition operations in OOTW, perhaps is unsuitable in many respects, and equates, to borrow a cliché' to "putting a square peg in a round hole."

Although the failure to focus on the unique nature and distinctions of coalitions in OOTW, and modify processes according may not prove fatal, it will perpetuate a trend of sub optimization. Lessons learned must influence approaches to coalition operations in these circumstances, and a standard framework developed. This will enhance a coalition's ability to rapidly and efficiently engage in a specific situation. Instead of trying to frame a situation to fit old doctrine, the doctrine will be tailored to fit the situation. The solution is different every time. This will impact a coalitions ability to rapidly and efficiently engage in a specific situation. Instead of trying to adapt a situation to conform with doctrine, more effort is required on developing doctrine that fits a situation.

The examples provided in this chapter demonstrate that coalition goals, objectives, and working relationships are established via the process of CO^3-- COordination, COoperation, and COnsensus. The development of a more appropriate framework with which to approach future coalition operations hinges upon the recognition of this fundamental premise. Developing an appropriate framework, however, requires an investigation of not only the conceptual impediments pertaining to command and control, but the physical challenges as well. This is the objective of the next chapter.

V. INTELLIGENCE LESSONS LEARNED

A. INTRODUCTION

1. Purpose of the Chapter

The purpose of this chapter is to provide the reader with an appreciation of the existing challenges in ensuring that all coalition members have the necessary intelligence and information with which to execute their respective tasking and responsibilities.

The degree to which coalition partners share a common picture of the environment, hence their ability to formulate appropriate operational decisions, hinges directly upon the amount and applicability of information and intelligence provided. Assessment of existing C2 processes requires both an understanding of the conceptual elements pertaining to command and control, as developed in Chapter IV, and full knowledge of the informational dynamics present in the OOTW environment.

Many of these issues are outside of the strictly functional or operational boundaries within which this thesis is focused. However, they are critical to understanding some of the potential and realized problems inherent in developing a common process.

2. Intelligence Overview

The contribution of command and control to military effectiveness is based upon the use made of its basic commodity- information. With accurate information, uncertainty about the operating environment can be decreased, and decisions concerning readiness, movement, and applications of a force's

resources can be made with a more comprehensive understanding of the likely costs and benefits. [Ref. 50:p. 19]

The ability to conceptualize, plan, and execute operations rests upon the timeliness and applicability of information and intelligence. The intelligence cycle as developed in Chapter II, in one form or another, is the manner in which military forces and other organizations develop awareness on the capabilities, organization, and intentions of the threat. Additionally, the cycle provides insight into other environmental considerations that may impact operations.

Without this foundation, employed as a collective and trickle down process that encompasses the strategic, operational, and tactical levels, it is unlikely that a coalition will develop uniform perceptions concerning the either the threat or required action. [Ref. 34:p. 65] This "intelligence preparation of the battlefield" or IPB process must attempt to cover every necessary facet of the operating environment of import to the coalition. There are, however, several complicating factors inherent both in existing intelligence institutions and in coalitions that inhibit the ability of the intelligence community to meet a force's information requirements in OOTW.

B. INSTITUTIONAL PROBLEMS

The absence of a common approach to intelligence permeates all levels of the US intelligence community, and is largely a result of varied points of focus and emphasis among the services and the community as a whole.

The US intelligence infrastructure is currently struggling to adapt to the post Cold War environment. For 40 years, the Soviet Union provided a convenient and constant focus for the US intelligence community. The boundaries that guided previous practices and collection emphasis, however, are fast eroding. The new world order has resulted in an understandably more diffused intelligence effort. Regional conflicts, economic and maritime concerns,

terrorism, counter-narcotics, and proliferation of weapons of mass destruction all provide the intelligence community with more than enough work to keep gainfully employed. The perpetual shift in emphasis as dictated by the rapidly changing pace of world events, combined with limited intelligence assets, both as concerns personnel and resources, has logical consequences for sustainment and quality of support to the operational forces. The community is doing the best it can with what it has, but is significantly taxed.

Like the rest of the Department of Defense, the intelligence community is effected by cuts and consolidations. The impact of the cuts is already been felt, with an overall 25 percent reduction mandated by 1997. The reorganization under way will affect DIA's collection, production and infrastructure functional arrangement, with a related manpower reduction of 17 percent and a cut in the number of directorates from eight to four. [Ref. 51:p. 11]

Furthermore, recent reorganizations of the operational intelligence support infrastructure have mixed implications for operation forces. Commitments and tasking for the intelligence community have increased in both quantity and complexity, but the number of resources available to address the requirements have not. In the wake of the "peace dividend," separate service autonomous facilities, personnel, and resources have been consolidated into joint intelligence organizations under a myriad of aliases, including Joint Intelligence Center, Joint Analysis Center, and Atlantic Intelligence Center. For several reasons, it is as of yet unclear whether this structure will adequately provide the level of support required at the operational level.

The first misgiving concerning the new structure involves the degree to which the US services have adopted the notion of jointness, as pertains to providing intelligence for operational forces. Recent discussions with senior intelligence officers in theater command centers indicate that there is not a uniform degree of commitment to the new joint concept. Due to reasons that

include career management and promotion concerns and a perceived need to reserve a preponderance of a services intelligence resources for autonomous support, the services, again, lack a consistent approach.[1]

These perceptions, in part, stem from fundamentally different approaches to intelligence. For example, the Navy and Marine Corps historically integrate intelligence personnel directly into the operating forces. Conversely, the Air Force has established entirely separate intelligence units to provide required support to operators. Respective approaches to integration may have consequences for capacity in certain circumstances. The Navy is relatively proficient in conducting operational analysis, yet lags in strategic analytical capability. Air Force intelligence capability is reversed entirely, with proficiency residing in the strategic arena. Additionally, philosophical differences exist between services as to the true role of the intelligence professional. For example, the Navy encourages every intelligence officer to conduct his or her own independent analysis. This analysis is included in products released from Navy specific commands. The Air Force intelligence process, however, is more hierarchically driven, with analysis funneled through increasingly senior levels of the intelligence organization prior to release. [Ref. 53] The point of this discussion is that intelligence may be conducted differently from JTF to JTF, depending upon which service or individuals are in charge of the effort. This may effect standardization and support both internally and with other coalition partners.

An additional element of the debate involves the levels of support available throughout the various theaters. Not all CINCs have a JIC, or JAC specifically assigned to address the needs of their respective theater. Potentially, the level of support to various components may suffer. "Borrowing" resources of any kind

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[1]These opinions were conveyed to the author by several US Navy intelligence officers who made these observations during a field trip to the primary US intelligence facilities on the east coast in April of 1993.

has disadvantages, logistics support among the many. The complications involved with having the "teeth" of a resource, but lacking the indigenous "tail" to support it are serious. Further, one unit's borrowing of another's resources is predicated upon the lender not needing the resource. Priority of support would predictably go to the "owning" unit, or its subordinates. [Ref. 52]

Personnel manning at the operational and tactical levels is also a problem. Personnel shortages and the overtaxing of these scant resources further precludes appropriate analysis. For example, a majority of a military intelligence officer's time is spent managing resources, and ensuring that the flow of information up and down the chain of command is adequate. Considerable time is required to lay on tasking, and other facets of collection management, as well as managing the diverse and constantly changing array of ADP systems. Analysis of collected information is conducted in whatever time is left in a day.[2] [Ref. 52]

A final institutional lamentation concerns the orientation of the intelligence community. US strategy was clear during the Cold War: contain the Soviets and deter nuclear conflict. The strategy was clear, hence the role of intelligence was also clear: find out how Soviet forces operated and provide adequate warning of any Soviet attack. The numerology of potential conflict with the Soviet Union caused the intelligence community to focus on the "how many are there" type of analysis. Qualitative assessment was essentially an afterthought, as in the mind set of US forces, "Ivan's" intentions were perfectly clear. [Ref. 53:p. 60]

Now, US strategy depends upon the region, and there is a tendency to use intelligence organizations trained in threat assessment and warning to estimate events in a rapidly changing and uncertain political and social arena as exists in OOTW. This is a role for which the intelligence community is not prepared.

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[2]Also, author's discussions with Naval Intelligence Officers in numerous intelligence seminars conducted at the Naval Postgraduate School during 1994.

Training methods have historically contributed to deficient analytical support. The historical focus on technological gadgetry and the resulting intelligence collection system has further inadvertently handicapped qualitative analytical capability. The current system is designed to count and detect, not assess. [Ref. 53:p. 60]

Understanding an asset's capabilities and limitations is an essential prerequisite to employing it to its maximum potential. This is a noted shortcoming in the historical use of intelligence. Commanders who understand what military intelligence can and can not do will likely gain more from its employment.

There is a need to prepare US military officers to anticipate enemy perceptions. During the Gulf War, General Schwarzkopf and his air component commander, Lieutenant General Horner, were sensitive to the cultures and political views of their Arab allies. This sensitivity was gained by spending time in the region. They used their appreciation of the situation to establish and maintain a very diverse coalition. [Ref. 53:p. 60] This example, although extracted from a conventional operation, provides the reader with a prelude of the intelligence challenges facing a coalition in an environment as complex as that encountered in most OOTW.

C. OPERATIONAL CHALLENGES

Many of the intelligence challenges in operations other than war stem from the unfamiliar and unusual environment in which the military intelligence infrastructure is used. The operational constraints, considerations, and complications are very different than those in conventional operations.

A recurring theme in this thesis involves the lack of a standard approach to command and control and its associated components. This is also true of intelligence in OOTW. There is doctrine for joint intelligence operations, and

there is doctrine for multinational intelligence operations. However, there is no doctrine for combination multinational and multiorganizational operations in the irregular environment. There are several ways in which this impacts the intelligence community.

1. Role of Intelligence

The first impact may be labeled as confusion. If there is no doctrine for a particular type of operation, does this imply that intelligence does not have a role to play? Of course not. However, using conventional intelligence doctrine for OOTW creates a variety of opinions as to the appropriate role of intelligence.

Combat operations involve well defined mechanisms for conducting ongoing assessment. Intelligence tracks a forces impact on the enemy and submits this information to the operators to factor in to subsequent operations. The intelligence cycle, as developed in Chapter II, provides the traditional vehicle by which to achieve this. In many OOTW, however, especially those involving humanitarian assistance and disaster relief actions, there is not a clear cut doctrinal approach at conducting such assessment. [Ref. 47:p. 51]

In an oversimplified description, the intelligence community traditionally has its charter in identifying the location, resources, capabilities, and intentions of an enemy. The "enemy" in OOTW, however, is potentially more abstract than the intelligence community is accustomed to dealing with. Does the intelligence community consider the environment in the aftermath of a typhoon, or starvation in the wake of anarchy as an enemy? A "purist" would argue that environmental considerations are friendly situation information, thus belong in the realm of operations. If this is true, how can intelligence contribute to an operation where these sorts of adversaries are the primary targets of the deployed force?

The JTF that deployed to OPERATION SEA ANGEL wrestled with these very issues. Operators maintained that the process "looked, walked, and talked like the intelligence cycle." The process of assessment of the effectiveness of

the relief effort was evolutionary, transferring from the J-3 section to the J-2 section. The J-3, who recommended the move, still wondered if there was a more appropriate approach, however. [Ref. 47:p. 51]

Another contention concerning the role of intelligence is its relationship to operations. There are many operators who consider the intelligence community as nothing more than "librarians," who have fallen out of touch with what the operational community requires. A central notion in successful implementation of IPB is that it requires a tighter, closer, and more proactive relationship between intelligence and operations personnel. Although historical precedence and lessons learned espouse the requirement to keep intelligence and operations separate (purportedly to ensure a detached and unbiased assessment, and to preclude intelligence telling the commander what he wants to hear), perhaps there are reasons this may require re-evaluation. Many argue that the deviation between the intelligence community and operations has grown too large, and that the gap has resulted in an intelligence community that is unable to fully understand and anticipate what its customer, the war fighter, needs. Many also feel that military intelligence officers need more exposure to operational doctrine and procedures. Intelligence personnel need to be able to think operationally at all levels. Only then can they understand the perspectives of and the options available to potential foes. Military leaders and planners also need more exposure to areas where regional conflict is likely. There is a need to see and feel what these nations are like, as well as to develop an understanding of the history of the region. [Ref. 53:p. 60]

Intelligence can, has, and will continue to play a substantial role in OOTW. The relationship between the commander and intelligence, however, will largely dictate the contribution intelligence will make to a specific operation. The manner in which intelligence is structured to conduct its mission must encompass the strategic, operational, and tactical realm. This is due to the

"trickle down" interdependent relationship that exists between the three levels of operations. The mandate in an operation, for example, ultimately will impact the mission assigned to an infantry battalion or requested of a relief organization. Establishing this overarching methodology, however, depends upon the intelligence community's recognition of several of the other difficulties inherent in OOTW.

2. Identify Requirements

The nature of OOTW and the characteristics of the key participants have been developed throughout this thesis. The need to improve the understanding of these characteristics and peculiarities is also established. Consequently, the degree to which the environment is understood or misunderstood is one factor that will drive the appropriateness and sequence of intelligence and information to coalition partners.

Operations other than war require not only an understanding of the culture of coalition partners, but a heightened awareness of the socio-economic parameters of the target environment. Anticipating and prioritizing all intelligence requirements in OOTW is an ominous task at best. The requirements of coalition participants in OOTW are extremely diverse. It is also important to realize that each participant may have different needs which will vary with respect to assigned mission. NGOs, for example may need to know where the food and medicine is needed most. Military forces entrusted with coalition or indigenous population security may need to know where the hostiles are located and the potential impact upon NGO distribution efforts. Achieving unity of effort requires that the intelligence and information needs of all coalition participants are met as fully as possible.

Several recurring themes have developed in recent OOTW that demonstrate that there is perhaps a requirement to refocus the scope and efforts of the intelligence community in order to ensure adequate support to operational

forces. Perhaps these adjustments are best contemplated through analyzing several of the intelligence shortcomings in our three case studies.

3. Lack of Cultural intelligence

A glaring discrepancy from many past operations is the lack of resident and easily accessible information on both the country and population into which operations are conducted, as well on as the wide array of "players" who routinely participate in irregular operations. A greater understanding of both categories of information would greatly enhance operational and interoperability planning. Understanding the demographics of a country (including such items as religion, terrain, population centers, history of conflicts, etc.) greatly enhances the ability of planners to develop courses of action (COAs) that accomplish required objectives, and apply appropriate attention to areas of potential sensitivity (i.e., types of rations provided to starving people). Understanding the capabilities, doctrine, specialization, and equipment of other military and civilian organizations will facilitate greater operational effectiveness by allowing commanders to better match operational taskings with capabilities.

The politically sensitive and peacefully oriented objectives of operations other than war mandate that forces operating within a target environment have a thorough acclimation in the culture. Understanding the cultural mindset(s) in an operating environment is critical in all aspects of coalition operations. Failure to understand the motivations and ideosynchracies of indigenous populations increases the chances of proceeding down an ill-advised operational path. These lessons have graphically surfaced during recent events in Somalia.

By the time UNISOM II assumed control from UNITAF on 4 May 1993, certain elements of the UNISOM leadership made the determination that the operation's success hinged upon the elimination of Aideed as the leader of the Habr Gedr sub-clan. Aideed was to be politically isolated, and not allowed to participate in the future government of Somalia. This decision embroiled the UN,

in the fabric of Somali politics, eliminating all claims it may have previously had as to honest brokership in the Somalia situation. To Aideed and his followers, the UN was now another faction to be dealt with. As war in Somalia is an extension of politics, conflict was inevitable unless negotiations were conducted, an impossible occurrence without the Havr Gedr and its allies in the Somali National Alliance (SNA). The clan structure in Somalia considers an attack on one member to be an attack on all. They do not have a tradition of personal responsibility for their actions, as the clan assumes responsibility. A better understanding of Somali culture may have prevented some of the disastrous events that occurred later. [Ref. 20:pp. 9-10]

Cultural capability was eventually developed, but should have been sought and provided earlier in PROVIDE COMFORT. Besides the normal intelligence requirements, the operation required a strong and instantaneous provision of "cultural" intelligence. Information such as the tribal and political structure of the Kurds, lifestyle habits, leaders and military organizations, and the history of the Kurdish/Iraqi conflict were vital elements of information in the CTF decision making and implementation process. The themes developed for psychological operations also depended heavily upon the cultural intelligence collected. [Ref. 48:p. 12]

A thorough understanding and assessment of regional demographics, customs and traditions is also required to ensure that anticipated coalition interactions with indigenous population contribute to a productive atmosphere. During OPERATION SEA ANGEL, there was a need for additional contracting personnel to address certain details concerning reconstruction requirements. Three women volunteered and were sent to conduct negotiations with the Bangladeshi government. This created an embarrassing situation, in that in a Muslim culture, men do not negotiate with women. Additional contracting specialists, males, were subsequently flown in to do the job. [Ref. 22]

Experiences such as these have resulted in a call for increased emphasis on compiling information pertaining to the cultural characteristics of likely areas of operations before a crisis develops. Although no one can predict, with certainty, where the next crisis will occur, foresight and common sense should provide adequate clues as to priority regions for this endeavor. Thus, the intelligence community can begin the task of compiling critical data on the demographics of "crisis candidate countries," as well as on the capabilities and limitations of coalition partners. The nature of cultural intelligence largely precludes its collection via any form of technological gadget. Two intelligence sources are key in developing the information base of the scope and breadth desired-- HUMINT and OSCINT.

Human intelligence or HUMINT plays an integral role in the level of internal cultural acumen a force has at its disposal in a crisis situation. Its intelligence is extracted directly from the sources either involved in an event or privy to the information. During Desert Shield/Desert Storm, one of the biggest intelligence gaps was found to be the lack of in-country sources (within Iraq) from which to gather intelligence on Saddam Hussein's movement's, mental state, or intentions. IMINT, SIGINT, and COMINT were available, but there was no one actually on the ground looking out for US interests. Developing a more comprehensive "cultural eyes on target" capability is important to future successes, and is an investment which may pay huge dividends in subsequent times of crisis.

Unfortunately, the US has a significant shortage of indigenous HUMINT sources. Developing HUMINT capability requires a considerable investment, particularly in time. In order to walk, talk, and think like the natives, one must live among them. Foreign Area Officer programs are a good start, but currently fall short of meeting the multi-dimensional demands in OOTW. Because of the time investment required to develop adequate HUMINT capability, and due to the

bias many bureaucrats have towards other INTs, many cuts have been made in the national collection programs. For example, during the 1970s Admiral Stansfield Turner viewed HUMINT as an archaic form of collection and withdrew over 200 case agents from the field. [Ref. 54:p. 218]

Open source information or OSCINT is similarly critical in developing the "database" support desired. Substantial intelligence relating to the political, military, and economic affairs of other nations is available through means other than clandestine technical and human source collection. OSCINT is an important means of collecting information of this type. OSCINT includes the acquisition of any verbal, written, or electronically transmitted material that is legally acquired. This includes newspapers, magazines, and unclassified journals as well as the monitoring of public radio and television. The intelligence community must determine what joint endeavors, with government and private industry both at home and abroad, will facilitate the rapid digitization of Third World data useful to coalition forces in OOTW. [Ref. 15:p. 251]

OSCINT has an advantage over traditional intelligence means in that intelligence presumes processing and analysis, not simply the dissemination of raw data. OSCINT can be viewed as coherent analysis reflecting access to multimedia open sources. Those sources are not classified at their origin, are not subject to proprietary constraints (other than copyright), are not produced by sensitive contacts requiring obscuration, and are not acquired through clandestine or covert means.

Given these distinctions, the obvious utility of OSCINT is perhaps handicapped, especially as pertains to the OOTW environment. US intelligence officers are not accustomed to attacking intelligence needs outside of the historically established channels. This may potentially limit the scope and effectiveness of intelligence support in an environment that has so many open sources of information, as the thesis will subsequently discuss. [Ref. 55:p. 65]

At a minimum, an archived data base concerning potential target regions should include operational elevations and temperature, cross country mobility and inter visibility, hydrography, weather, culture, and the presence of US citizens. Investments, generalizations about bridge loading, tunnel clearance and river fording limitations are also critical. Logistics factors may include the availability of maps and charts, the distance of the capital cities from the five-fathom line, the number of airfields and ports that will support the introduction of forces, and the time in days it would take the nearest forward deployed force to reach the country of interest. Further, communications data, such as the angle and availability of satellites, local switching facilities, and engineering information such as refrigeration, warehouse and lumber facilities may be extremely pertinent. [Ref. 56:p. 120]

Developing this sort of a data base, however, is easier said than done. Simply stated, the resources (manpower and collection resources) required to develop and maintain a capability of this sort simply exceed current available resource levels. One suggestion towards alleviating this shortage involves dividing the work load between trusted allies (i.e., the British would take a chunk of the world, the Japanese another, the Koreans another, and so on). After allies finish compiling the data on their respective reasons, everyone could then trade "chunks." The magnitude of the undertaking obviously requires prioritization of effort, and identification of which regions of the world are most important to US forces. Although efforts towards development are on going, it will be sometime before a capability of the type envisioned comes to fruition. [Ref. 57]

4. Prioritization and Anticipation

The priority of the information required is equally important, in that it determines the sequential focus of the intelligence community, assuming that resources will be limited. Priority will shift as the mandate, objectives, and tactical situation shifts. It is imperative that the intelligence community be able to

prioritize and provide the user with the critical items first. Many examples of improper prioritization, or inability to deliver critical elements or products were encountered in recent experience.

Inevitably, a crisis develops in an area and under circumstances that a force has prepared for and anticipated the least. Due to a combination of factors, that includes limited embarkation space, the forces often find themselves short of (or completely lacking) requisite maps. Implications of this shortcoming are obvious. Insufficient mapping and geodesy plagued both Operation's Provide Comfort and Sea Angel. Throughout both operations, but especially during their initial stages, maps were in chronically short supply and often arrived late in the planning process. Despite the speed with which forces were introduced into the area of operations, higher headquarters should have anticipated the volume of maps necessary for such a large operation and taken a more proactive role in supplying JTF forces.

In PROVIDE COMFORT, the initial "handful" of maps were distributed to commanders only 36 hours before the initial units flew across the border. During SEA ANGEL the cyclone wrought horrendous change on the coastline of the operating area. As a result, the maps that were available bore little resemblance to the terrain features present upon arrival of the JTF. This posed significant problems for aerial navigation, and pilots had to manually update pilotage charts.[3] [Ref. 58]

Indeed, this problem is endemic. According to a 1989 study of 67 countries and two island groups of interest to the Marine Corps, 22 have no maps and would require rapid exploitation of multispectral imagery with grid overlays. Mexico, Surinam, Bangladesh, Greece, and Turkey fall into this category. Another 37 have only a few 1:50,000 tactical maps which generally

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[3]Author's personal observations in PROVIDE COMFORT, and Col. Keith Maxfield, G2 MARFORPAC, Personal Interview, 9 December, 1993.

cover only the major ports and cities, showing no manmade features (roads, airfields, etc.) established within the last ten years or so. Columbia, most of Central America, Peru, and most countries in Southwest Asia, Asia, and Africa also fall in this category. Only 10 of 69 areas of interest have complete 1:50,000-scale map coverage, and those are out of date by an average of ten years. [Ref. 58:p. 38]

A more rapid and responsive, real-time mapping capability is required at the operational level. Several initiatives are currently under way towards achieving this, such as a deployable compact disc (CD) map library, which contains a complete set of Defense Mapping Agency digital terrain products and topography initiatives using mutispectral imagery. These are not a total solution, however, because adequate reproduction capability is still logistically cumbersome. [Ref. 57]

Medical intelligence is another frequently overlooked or understated aspect that may figure heavily into a force's concept of operations. Accurate and timely medical intelligence is vital in most circumstances surrounding disaster or humanitarian relief. Prerequisite to alleviating suffering is a knowledge of the ailments currently affecting the population, or a clear understanding of what afflictions are likely based on existing environmental conditions. This knowledge is equally important in protecting coalition forces and reducing the incidence of sickness and debilitation, hence degradation of operational effectiveness.

Current medical intelligence was lacking for many of the Major Subordinate Commands during Provide Comfort. Prior to debarkation medical intelligence assets consisted of packets published in 1988 and several AFMIC reports. No intelligence was available from Desert Storm. Information (in areas of climate, hazardous plant and animal life, and incidence of intestinal and upper respiratory disorders) was inadequate and replete with inaccuracies. [Ref. 48]

Weather and its potential impact upon operations also requires consideration. Weather reports, trends, and forecasts are vital elements of information in relief situations. This information is especially critical when the weather is the threat, or when the weather has significant operational implications. The angry sea-states encountered by sea-based forces during OPERATION SEA ANGEL are illustrative of this point. Ships required meticulous and constant maneuver to avoid running aground in the unstable waters that followed the onslaught of the typhoon. The implications of weather for air assets are similarly obvious. [Ref. 22]

In some instances, lack of this information is a factor of JTF composition. During Operation Provide Comfort, weather reports were not consistently received from higher headquarters. Aggravating this shortcoming, the JTF lacked an adequately equipped, dedicated meteorological support detachment. Outside sources were either not tasked with, or incapable of providing the required levels of information. Although conditions ranged from cold temperatures and snow when the CTF began operations in April, to a searing 120 degrees by the time the hand-off to the UN was complete in June, the weather remained relatively constant. However, in this situation (as well as in any other environment), weather could have presented significant challenges/ obstacles to operations, and certainly poses ramifications for the types of equipment (both personal and operational) that a force will bring to the field. [Ref. 59]

5. Identifying Resources

The number of available intelligence sources is also typically increased in operations short of war. The "multinational flavor" and international (non-military) presence normally associated with operations of these sort results in a plethora of potential resources that can make substantial contributions to intelligence and information collection efforts.

Few would argue that US intelligence assets developed for more conventional tasks have significant benefit in OOTW. US forces are accustomed to using those sources, frequently with great success. A clearly defined enemy allows a focused intelligence effort. Intelligence contributed in a multitude of ways to the CTF tasking that developed during PROVIDE COMFORT. Tactical reconnaissance capabilities were indispensable to the CTF. Through these assets, immediate updates on the refugee and Iraqi military situations were provided. The need for responsive reconnaissance capability was highest when the coalition and Iraqi forces faced off after US Marines made the initial entry into what was to become the expanded Security Zone. The movement and disposition of Iraqi military units were critical essential elements of information (EEIs) to the relatively lightly armed CTF security forces. All **tactical** intelligence collection assets were employed to their fullest extent, and every available opportunity to gather intelligence on the Iraqis and Kurds exploited. Aggressive ground and air reconnaissance plans resulted in constant surveillance on Iraqi positions and provided timely and accurate information on the location and dispositions of all Iraqi units within the Tactical Area of Responsibility (TAOR). [Ref. 60]

Daily contacts at the small unit level within the Security Zone and refugee camps also became excellent sources of information. This information had to quickly flow to the CTF for analysis and dissemination to maximize its utility. Once synthesized with appropriate tactical reconnaissance, this type of HUMINT provided key intelligence needed for operations and security.

The activities and threats posed by the plethora of terrorist groups throughout the area of operations was also cause for concern. Updates and security assessments from multiple sources, including Turkish contacts, allowed for threat condition adjustments and implementation of appropriate security measures. [Ref. 48]

Additionally, USN Tactical Airborne Reconnaissance Pod System (TARPS) aircraft provided outstanding information. Interrogator translator team support was superb and crucial to mission accomplishment. HUMINT operations and collection provided excellent information concerning Pesh Merge activity and Iraqi secret police activity. Signals intelligence (SIGINT) collection was superlative and well integrated with coalition electronic warfare (EW) forces, despite the difficult SIGINT collection environment.. [Ref. 61]

Non-traditional sources are also plentiful in OOTW. Non-governmental organizations (NGOs) and private volunteer organizations (PVOs) also figure heavily into intelligence collection efforts. These organizations are often resident in a country for considerable periods of time prior to a crisis situation, and may constitute the most valuable initial information available to the coalition. For example, CARE was the first organization able to provide the JTF commander with any situational information during SEA ANGEL. This organization knew a great deal about the circumstances in the surrounding communities, and played a pivotal role in determining priority of effort. [Ref. 22]

However, in order to maximize the utility of these organizations, the JTF must remain sensitive to host nation, and NGOs perception of military intelligence and overall suspicion of the military. The arrival of American forces during OPERATION SEA ANGEL was greeted initially with great concern by NGOs present in the affected area. However, the JTF commander quickly assuaged NGO fears that the US was going to take over all aspects of the operation by embracing the relief agencies and their commensurate capabilities, and stressing the cooperative effort required to stop the dying and eradicate the suffering of the Bangladeshi people. By fully integrating NGOs into the coalition, a cooperative and efficient working relationship was established, which had significant ramifications for operational success. [Ref. 22]

Local authorities and civilians represent a substantial, albeit obvious, intelligence source. During Provide Comfort, daily contacts at the small unit level within the Security Zone and refugee camps became excellent sources of information. This information had to quickly flow to the CTF for analysis and dissemination to maximize its utility. Once synthesized with appropriate tactical reconnaissance, this type of HUMINT provided key intelligence needed for operations and security. Similar circumstances were encountered during Sea Angel.

6. Managing Collection

OOTW present a mixed blessing to the intelligence community. On one hand, there is an uncharacteristically large number and variety of sources from which to develop a cohesive picture of the operational environment. Conversely, managing collection from the abundant source pool and fusing it into a usable product is a monumental undertaking. The sheer number of potential sources and users of intelligence presents coalition intelligence planners with an ominous task at best. The guiding principles for managing collection should be to focus first on what is needed, identify when it is needed, and then manage collection to provide the appropriate intelligence support in a timely manner.

The sharing of intelligence and sensitive technical means depends upon providing the interpreted product of intelligence to those members of the coalition who require it. The US has significant capability, and where possible, it should be made available to a coalition to provide support to the operation. Other countries have alternative means and systems which must also be incorporated into a workable intelligence collection plan that provides accessible products to others. [Ref. 34:p. 78]

Despite the increased number of sources, and the relatively "open source" type of environment present in many of these operations, if the collection and dissemination effort is not managed correctly, serious intelligence

and information deficiencies are likely to result. Whether acknowledged or not, history has shown that managing the assets and efforts of a coalition force is challenging and sometimes ignored altogether.

During Operation Provide Comfort, despite the overwhelmingly successful tactical intelligence operations, information flow from higher headquarters was virtually non-existent and collection management was disjointed. The focus on reporting, was up the chain, and not down. Little to no information was received from higher headquarters on developments within Iraq that could have affected CTF security force operations until D+35. Had Iraqi forces attacked during the early stages of the operation, the CTF would not have known about it until the Iraqi forces were within the TAOR. The problem was exacerbated as the security zone expanded, and higher headquarters coordination and planning of collection operations collapsed. The lack of guidance from higher headquarters resulted in direct coordination between Major Subordinate Commands (MSC's) for coordination and deconfliction of reconnaissance missions, as well as other "work-arounds" outside the official chain of command to ascertain current levels of Iraqi activity. [Ref. 61]

Intelligence providers must also ensure that they recognize the need of the individual coalition partners, and ensure that only required information is funneled to them. The problems involving overload that occur at the central management facility can also happen at the tactical level, with similar ramifications.

7. Information Management

Perhaps one of the most formidable challenges in a coalition environment involves managing the diverse yet voluminous types and amounts of information flowing through the organization. Information management is as integral and important a part of C2 of military forces at all levels as conducting operations. C2 systems supporting forces in OOTW (and any other mission)

must have the capability to provide the appropriate information to the right person at the right time, which allows forces to maximize opportunity and accomplish their mission.

The increased availability of sources is not necessarily a benefit if the intelligence staff is not appropriately manned or organized to deal with the elevated flow of information. Again, collection managers must take care not to bring in overwhelming quantities of intelligence and information, so as to exceed their capacity to expeditiously process and disseminate critical information to supported units.

8. Disseminating Intelligence

Once the sources are identified, and their capacity tapped, a product of some sort or another is produced for dissemination. Many nations, the US among them, are guarded in their approach to sharing and disseminating intelligence with varied levels of classification and sensitivity with the diverse array of coalition participants.

Few nations wish to share their sensitive sources of intelligence gathering or make known their technical strengths and weakness of various collection means. Coalitions potentially include partners whose cooperation will only last as long as the threat, and will dissipate once the contingency is resolved. Further, past US history with coalition warfare has included nations with whom the US was already engaged in an alliance, NATO for example, where protocols and limits concerning intelligence sharing already exist. Regardless of the complications, intelligence must be shared, at least at the operational and tactical levels. [Ref. 34:p. 70]

Certainly, arrangements and sanitation work arounds exist that allow critical materials to get to those who need them most. In some circumstances, depending upon the composition of the coalition, standard agreements and treaties may guide intelligence sharing between nations. However, the editing

and other sanitation methods used take up precious time from an intelligence shop that is likely overburdened and undermanned.

The threat to coalition forces is a significant factor in determining the level of sensitivity appropriate for a particular operation. This will govern which sorts of intelligence are releasable to which participants and under what conditions. Considerations include not only what types of information are shared, but also the potential for disclosing the manner in which the intelligence was obtained. Initial assessments must include the permisivity of the environment. Appropriate decisions as to the overall classification levels of the intelligence effort are then possible.

It is imperative that the desired level of security be declared as soon as feasible to prevent any additional conflicts or delays in providing coalition members with required intelligence support. PROVIDE COMFORT involved a number of allied nations. The classification environment that existed in this situation was considerably more open than existed previously in Desert Storm. This posed a problem for US military personnel who are constantly ingrained with the importance of safeguarding operational and intelligence information. Many individuals had difficulty releasing information in an unclassified or "releasable to foreign nationals" environment. Consequently, information flow was frequently less than optimal. [Ref. 62]

A final challenge in the dissemination of required intelligence and information involves the methods by which the information is conveyed. Considerations involving the command and control system architecture impact upon the manner, type, and timeliness of information transfer from source to user, and are the subject of the subsequent chapter.

D. CONCLUSIONS

The contribution of intelligence is critical in OOTW, but the path to maximizing its potential is laden with difficulty. There is currently no common approach that adequately addresses the peculiarities of intelligence in OOTW. Existing guidance, while better than nothing, leaves it to the intelligence community to proceed in ad-hoc fashion in an environment for which it, in many respects, is unaccustomed and ill-prepared. Shortcomings in provided support are a result. A large portion of the deficiency, in the author's opinion, is again in using guidance developed with a relatively narrow focus, as is the case with current US doctrine, and trying to apply it to a problem that is much more complex and broad. In short, current doctrine does not take a sufficiently holistic and broad view of the circumstances present in OOTW.

To summarize the unique characteristics of the OOTW environment: the nature of the objectives in OOTW require an emphasis on intelligence of a different type than the intelligence community is used to providing; the requirements of the coalition partners are broad and complex;. potential intelligence sources are plentiful, but are different than what the intelligence community is accustomed to using, and require a much greater level of sensitivity in order to exploit; collection management is complicated by the variety of need and the number of sources; dissemination hinges upon security and sharing arrangements which are established either before or during an operation.

A coalition must have a robust collection and analysis section, capable of directing and coordinating the intelligence collection efforts of all partners, taking full advantage of organic capabilities. Tactical information must be analyzed, tailored and fused with available theater and national information to provide the clearest picture to the tactical consumer. For any contingency operation, coalition collection capabilities must be identified, and an analytical section organized to fulfill coalition requirements. [Ref. 61]

The Atlantic Intelligence Command has published an SOP that details required intelligence functions for joint forces and, the author feels, represents a reasonable goal for a coalition intelligence effort. These functions include *indications and warning, current intelligence, military capabilities assessment, enemy courses of action estimate, military related intelligence assessment, target intelligence support, collection management, and operational intelligence.* A unified, centralized, all-source intelligence system, at the coalition level, is vital to success in the OOTW environment. This intelligence system should:

- Operate throughout the area of operations (at a minimum).
- Maintain a centralized system of source control
- Coordinate all intelligence and counter intelligence programs.
- Provide direction and guidance for the overall intelligence effort.

In accomplishing these objectives, however, the intelligence community needs to fill the void of an appropriate framework to methodically think through the issues effecting intelligence support in OOTW, before the next crisis occurs. The propose of such a strategic outlook is to allow forces to anticipate those factors that are key to successful campaigning and intelligence support in OOTW.

VI. COMMUNICATIONS LESSONS LEARNED

A. INTRODUCTION

1. Purpose of the Chapter

The purpose of this chapter is to provide the reader with an appreciation for the difficulties involved in establishing a comprehensive and coherent communications plan that fulfills the needs of a coalition in operations other than war.

2. The Problem

The ability to apply the tenants of any sort of common doctrine that may eventually evolve relies upon developing an architecture that is capable of integrating all coalition participants in a seamless fashion that allows for appropriate levels of mutually reinforcing support. A situation is not discernible, a plan executable, or an evaluation of effect possible without a sufficient communications architecture with which to receive and send appropriate information/intelligence.

Unless the architecture permits the ability to share with and receive information from fellow coalition partners, risks and shortcomings will result. Command and control in coalition operations is difficult for a number of reasons. After all appropriate command relationships have been established, however, the problem remains with execution, and implementing the C2 structure that has been agreed upon. Where hardware and protocols are concerned, US forces still have difficulty operating with one another. Combine this factor with forces from other countries and international organizations, each with its own standard

equipment and operating procedures, and the problem is exacerbated immeasurably.

Given the dissimilar nature of the doctrine, equipment, and procedures that the myriad of coalition partners bring to the playing field, creating such a "seamless" architecture are extremely difficult. A key rests with ensuring that command and control system planning be given adequate priority and stature with other sorts of operational preparation. Too often, communications does not receive an appropriate amount of consideration at appropriate times. In many instances, the correct time for rigorous assessment occurs during the programming and acquisition cycle. Other factors involve doctrine, interoperability, and finally, planning. Some of these issues are institutional, and others involve lessons learned from previous operations. They all warrant discussion.

B. DOCTRINE

> The command and control (C2) of military forces at all levels is as much a problem of information management as it is of carrying out difficult and complex war fighting tasks. Command, control, communications, and computer (C4) systems supporting US military forces must have the capability to filter the information that is important, determine who or what needs it, and ensure that it gets there in time to be used. Therefore, the fundamental objective of a C4 system is to get the critical and relevant information to the right place in time to allow forces to seize the opportunity and meet the objectives of the operational continuum. [Ref. 16]

A common, workable doctrine is required to ensure that a coalition's communications architecture is as optimally developed as possible. Disparate parts, disparate procedures, and disparate players must all be blended into as cohesive and seamless a structure as possible. This requires an intensive amount of cooperation and coordination among all participants.

As with command and control and intelligence considerations, already presented in the thesis, a common approach must encompass all appropriate aspects of the operation and its requirements, and will require participants to look beyond the scope of the relative ease involved in unilateral planning. An initial analysis of current US doctrine may provide clues as to what a challenge developing cohesive doctrine for coalitions may entail. Two potential difficulties are present in current US communications doctrine, and, again, the difficulty springs from the historic lack of a "joint strategic paradigm."

Current US communications doctrine and operational practice entails establishing a "network of networks" in joint and combined operations. Each sub-network has within it two or more switchboards, or more abstractly, "nodes." The number of nodes will vary per the size of the operation. The joint doctrine identifies a "generic C^4 joint system that links the supported CINC to the JTF, the JSOTF, the deployed service components, and the DCS. [Ref. 63:p. II-1] All the services communications systems are substantially different, and each service maintains and controls its network via its own management cell. CINC and JTF level administrators have an even more ominous task in integrating the service networks into a cohesive theater network which supports the operational commander.

Operations other than war often involve significant numbers of nodes, both US and allied, spread out across vast geographic regions. For US forces, the nodes are connected by multichannel transmission links, normal over some sort of multiplexed radio path. The links between sub-network are known as gateways. The JTF commander is provided only generic guidance relevant to deciding how to employ communications systems between units and commands. Doctrine states that "..communications and C4 systems can be employed as follows: senior to subordinate, supporting to supported, reinforcing to reinforced, left to right, between adjacent units as directed." [Ref. 64:p. 13] However, little

guidance exists concerning the functional aspects of integrating communications networks of the Services, let alone other nations. Although the JTF commander has *the authority,* with regard to US forces, to arrange communications assets however he chooses, the details on how this is done are scant. [Ref. 64:p. 13]

As delineated in Joint Pub 6-05.1:

> When two or more component commanders are collocated within a geographical area, their C4 requirements are to be coordinated and consolidated to the maximum extent possible. The responsible joint HQ J-6 is informed of any cross-Service agreements. [Ref. 63:p. II-4]

This, for all intents and purposes, does not provide the JTF commander with the directive type authority needed to ensure optimal architecture configuration. The commander appears to have only arbitrator type guidance in controlling how two or more components may choose to set up their networks. Although benefit of the doubt ought be given to appropriate decision makers as to the best set up, this decentralized decision making in a network presents some risks as to sub optimization, assuming that Air Force (or any other service) network managers will have ingrained biases favoring their respective services, regardless of the consequences to others. [Ref. 64:p. 14]

The lack of directive doctrine also effected communications planning for OPERATION RESTORE HOPE.. A single point of contact with tasking authority from Commander Joint Task Force did not exist in the case of both the Army and the Air Force components (both whom were major communications contributors and planners). Plans were established on a "what are you bringing" basis vice a more direct, "you <u>are</u> bringing this," tasking mechanism. [Ref. 65:p. 6]

The point of this discussion is that if current US doctrine is insufficient in detail to guide US services in establishing a viable C2 architecture, it may also be inadequate to deal with the increased complexity and problems experienced in a coalition environment. Complicating the authoritative aspect of current

doctrine is the problem in physical implementation. Joint Pub 6.0, *Doctrine for Command, Control, Communications, and Computers (C^4) Systems Support to Joint Operations,* classifies military communications systems as either strategic or tactical. The categories of communications, however, are not directly paralleled by the levels of operations- strategic, operational, and tactical- that are used elsewhere in joint doctrine. Some complications may result, as discussed below. [Ref. 64:p. 7]

As developed in Chapter II, the Defense Communications System provides the connectivity from the National Command Authority (NCA) down to the CINCs and to all of the various DOD organizations that could potentially support a JTF. If a CINC or JTF headquarters must deploy, it requires a level of communications support that will accommodate the volume, security, and responsiveness of the information required for the situation.

Current doctrine envisions an "extension of the DCS" by combatant commanders, with tactical assets provided by components. [Ref.16:p. III-7] However, there is a significant gap between the strategic and tactical levels of communications doctrine and equipment which effect communications support at the operational level, and makes the "extension" difficult to accomplish. For example, during Operation Provide Comfort, precedence calls were not reliably processed from the tactical network, through the gateway, and into the DCS network. The Combined Task Force (CTF) Commander even occasionally had his personal phone calls blocked. Although the problem was solved in a matter of days, it illustrates the potential difficulties in "extending the DCS" and linking dissimilar communications networks in a time sensitive manner. [Ref. 64:p. 8]

JTF asset availability may also preclude or confound extension of the DCS, as seen in OPERATION RESTORE HOPE. Ground Mobile Forces (GMF) equipment is required to provide digital backbone to geographically dispersed elements of a force outside the range of terrestrial systems. In the case of the

First Marine Expeditionary Force (I MEF), having only a single suite of GMF SATCOM precluded displacement and restricted the ability of planners to provide for DCS robustness. [Ref. 65:p. 9]

As shown, although the concept of extending the DCS is conceptual viable and desirable, realization of the concept is subject to several technical and doctrinal realities that will preclude satisfactorily effecting the extension in a time sensitive situation. The previous discussion also illustrates that connectivity and architecture considerations require additional attention within the services and DOD, in general. Historical focus has clearly centered on the prosecution of tactics, not on resolving communications problems. [Ref. 66]

Today's doctrine is geared towards gluing the service distinct systems together, and although there is an increased emphasis on developing interoperable systems, the US will have to live with systems currently in inventory. Given budget constraints, it is not reasonable to expect that current systems will be scrapped in favor of a new baseline, fully interoperable suite of equipment for all the services. Systems will arrive incrementally to create desired levels of interoperability among US forces, and hopefully, standards will be adopted by allies and other potential coalition partners to decrease equipment interoperability problems in future crises. Sustained pressure is required, however, to ensure that future acquisitions are interoperable, and more desirably, interchangeable.

C. INTEROPERABILITY

Interoperability, as alluded to in the previous section, is a primary impediment in achieving the desired architecture. Interoperability entails,

> The ability of systems, units, or forces to provide services to and accept services from other systems units or forces and to use the services so exchanged to enable them to operate effectively together. [Ref. 8]

The causes and impacts of the lack of interoperability are wide ranging, and involve both US specific and coalition issues.

1. US Specific Issues

a) Equipment

Equipment standardization is a recurring problem that continues to hinder joint and coalition operations. Legacy systems, doctrine, and procedures developed in the days of the Cold War are still in use. During the days prior to jointness, and to a more limited degree today, each service developed its equipment, from weapons systems, to C2 systems, independent of the needs of the other services. These systems were developed as part of service specific (and exclusive) networks.

The Tri-Service Tactical Communications System (TRI-TAC), developed and fielded over the past twenty years, was supposed to be the "cure-all" for interoperability at the operational level. The equipment was built according to specifications requiring technical interoperability with most tactical and DCS systems that exist yet today. However, there are currently several different versions of the TRI-TAC system in use that require additional engineering effort to develop a usable network.

The Army has converted its switchboards to a flood search routing scheme, the Air Force retained the deterministic form of routing, the Marine Corps uses a third version of TRI-TAC switchboard, and the Navy does not have any large tactical switchboards. The Joint Communications Support Element has another version of the switchboard, and the Special Operations Forces (SOF) deploy with still another. Additionally, several modes of transmission are used to interconnect the various types of switchboards in this "network of networks."

Satellite, tropospheric scatter, cable, and line of site radios using Very High Frequency (VHF), Ultra High Frequency (UHF), and Super High Frequency (SHF) bands are employed. The services have fielded a a unique combination of the transmission equipment in whatever quantities and variations the respective service has decided it requires. This dissimilarity between services contributes to the complexity of the network management function. [Ref. 64:pp. 14-16]

During OPERATION PROVIDE COMFORT, the use of UHF TACSAT assets minimized interoperability problems at the CTF HQ level. However, at the task force level, the vast number of communications systems used in the operation hampered interoperability. [Ref. 48:p. 13]

From this discussion, it is apparent that the US services have not yet completely conquered joint interoperability problems. Many initiatives are ongoing to rectify these problems. Technological disparity is addressed in such initiatives as C4I For the Warrior, and others. Despite all the effort and money funneled towards a solution, the doctrinal and procedural issues will take significant time to resolve.

b) Network Management and Logistics

Historical emphasis on service specific needs and subsequent system development also resulted in separate network management procedures. Resolving disagreements, especially between gateways, is complicated when the technicians at opposite ends of a problem approach the "troubleshooting" process in a different way.

Supply and maintenance procedures also vary among the services. The Army and Marine Corps, for example, push logistics support capability forward, to allow for more immediate support. The Air Force, however, maintains most spare parts at a sustaining base, often located back in CONUS, and calls forward critically needed parts when necessary. A JTF commander may,

consequently, have to take spare parts from Army or Marine stockpiles to repair a vital Air Force system while in theater. [Ref. 64:p. 16]

2. Coalition

Interoperability problems follow a similar pattern among coalition members. Often, in coalitions that involve alliance partners or where standing agreements or memorandum of understanding exist between participants, interoperability problems are somewhat abated. However, there are several recurring themes regarding the difficulties in achieving coalition interoperability.

a) Equipment

Several variations on equipment interoperability appear in coalition operations. The thesis has discussed the need to connect all participants in an appropriate fashion. Interoperability, however, is hindered largely as a factor of the equipment coalition partners bring or do not bring to an operation.

Many countries bring equipment into an operation that is not sufficiently interoperable with other forces. Standardization among allies and the US is achieved through international forums in accordance with policy and procedures in JCS MOP 147, "International Military Rationalization, Standardization, and Interoperability (RSI) Between the United States and Its Allies and Other Friendly Nations." This document covers all aspects of interoperability. With respect to C2 systems, the policy focuses on enhancing combined combat capabilities for US military forces to communicate and share data. Areas of particular concern for compatibility and commonality include C4 and automated information systems, battlefield surveillance systems, target designation systems, and target acquisition systems. [Ref. 16:p. V-1]

Further, as many nations now use computers in their force management schemes. It is important that we share common standards which will permit a rapid merging of information management systems. [Ref. 34:p. 69]

Organizations with whom such formal arrangements and consultation is not conducted must be approached via other channels, to ensure as great as possible a degree of interoperability is achieved.

Additionally, countries who provide forces for OOTW often lack the communications resources required for effectiveness in the demanding OOTW environment. Coalition organizational structure may or may not allow for timely procurement of gear prior to the commencement of operations. As a result, the US and its better equipped allies will likely shoulder an increasing burden to provide equipment for large contingents from other nations. [Ref. 44:p. 7]

The US professes its ability and "wherewithal" to tie such huge undertakings as coalitions together, and it is anticipated that US communications equipment will form the backbone of most operations that involve US forces. For example, 9th Communications Battalion, assigned to I Marine Expeditionary Force (I MEF), the Marine Forces Component and JTF nucleus for OPERATION RESTORE HOPE, provided cable and telephones to support the JTF J-1 (administrative section), Joint Visitors Bureau, Canadian Forces, ARFOR (Army Component), and MARFOR (Marine Component) in the early stages of the operation (prior to the arrival of ARFOR and MARFOR assets in country). 9th Communications Battalion also provided all message center switching support for the JTF, Joint Support Command, and ARFOR prior to transition to ARFOR support for the communications and message center. [Ref. 65:p. 7]

Regardless of what the circumstance involving equipment interoperability, the "fix" usually comes from US personnel and equipment pools, the exact nature of which will depend upon the nature of the security environment. NGOs pose the greatest difficulties in this arena, and have the most significant communications shortcomings. These organizations bring many unique capabilities into a OSOW environment, but are heavily reliant on local

telecommunications, which are threatened in many types of OOTW. To function effectively, communication augmentation is usually required. [Ref. 47:p. 43]

Unfortunately, lending equipment to others is often a double edged sword. Depending upon the threat environment (and hence whether or not secure communications is used) the patching problem is complicated. During non-encrypted operations, with partners that share a common language, a simple equipment loan may solve the problem. Non-common language is likely to require liaison personnel and equipment. During operations that require secure communications, if equipment is loaned, additional personnel are required to provide security. Regardless of the combination, US forces will likely suffer a reduction in personnel, expertise, equipment, and, consequently, indigenous capability. [Ref. 67]

b) Language and Procedures

Language is another significant interoperability problem. Translation of information into the multiple languages included in the coalition steals precious time from the command and control cycle, and will likely involve many errors. While it is common for coalition headquarters to maintain translation cells, the speed of translation will vary with the size and complexity of information to be processed, and the accuracy will vary from translator to translator.

The procedural realm of interface is an additional challenge, and many procedural elements of coalition participation may pose problems. A diverse array of concerns ranging from local area networks and appropriate baud settings to requesting fire support all require consideration in the planning stages of an operation. For example, it is not necessarily true that services share the same format for requesting and controlling air strikes or are familiar with procedures for controlling naval gunfire missions, if required.

There are efforts currently underway aimed at alleviating certain portions of the procedural difficulties potentially or actually encountered in past coalition operations. US forces, however, are still subject to the problems inherent with procedural incongruities. As discussed, the services have developed network management procedures for their new equipment independently. [Ref. 64:p. 16]

Further, lacking a common doctrine, basic military terms and symbology vary from nation to nation. As a result, limited information flows between coalition partners who do not share a common language. Many recommendations aimed at overcoming this difficulty exist. Some suggest a multilingual software that ties back to a common operating system is desired. Such software must be user friendly and easy to learn. A move to an icon based interface is also a possibility, as it is easier to standardize a picture than a word or phrase to describe an intended function. [Ref. 34:p. 69 and Ref. 66]

Additionally, coalition headquarters should have pre-prepared dictionaries of common military terms and symbols, both to facilitate translation for information management systems and to reduce the latitude translators have in portraying a term or symbols' meaning. Coalition capabilities and assets must also be archived in a C4I data base to enable both present and future coalition staffs to incorporate forces in battle management and other coalition planning. [Ref. 34:p. 69]

Even when procedures are established, however, getting all participants to adopt them is difficult, as was experienced during RESTORE HOPE. The Naval fleet ignored the established Inter-theater Communications Security Package (ICP) and used procedures that were intended for another area of operations. This left the Joint Force Air Component Commander (JFACC) on one key, and the Fleet on another. The ICP selected to re-standardize the communications security procedures caused a problem because

the Multi-National Forces (MNF) did not have the same key. Constant changes in the composition of the MNF further complicated matters. [Ref. 65:p. 26]

3. Liaison

Regardless of the cause of a lack of interoperability, liaison is a widely used method of ensuring interoperability in coalition operations.

> Liaison is the contact or communication maintained between elements of military forces that ensures mutual understanding and unity of purpose and action. In terms of mission accomplishment, liaison is one of the most effective principles of all and can be enhanced by placing competent C4 systems personnel with the forces employed. [Ref. 16:p. II-3]

Liaisons were heavily used during OPERATION PROVIDE COMFORT. As countries indicated a desire to join the coalition, USEUCOM authorized and encouraged direct liaison between the CTF and the nations' military representatives. Advance liaison teams contacted the host country and the CTF to iron out the details off their respective nations' participation. This was a highly successful way of developing the desired force composition and shape national contributions. It reduced duplication of effort and provided the liaison teams a good feel for the operation and allowed the CTF to fill certain priority requirements through allied sources.

Liaison was also critical in procedural standardization. A concern early on in the operation was establishing a common system for calling for and conducting air support operations. The US Marine Corps Air Naval Gunfire Liaison Company (ANGLICO) teams provided all coalition forces with a standardize capability that proved highly successful and was well received. [Ref. 48:p. 9]

D. PLANNING

> We were not able to establish communications other than air command and control, in terms of an ATC type mode, with the other countries that

worked with us because it was an ad-hoc relationship and they were never programmed in to be part of us. So our communications were essentially verbal, done by meeting... [Ref. 22]

Lieutenant General Stackpole's comments concerning communications during OPERATION SEA ANGEL capture a central notion required in achieving optimal command and control architecture's in operations other than war. Achieving interoperability requires planning.

This section of the thesis is not an indictment of any of the communications planners of any particular operation. Rather, the author's intent is to reinforce the notion that interoperability is not achieved accidentally, and that the further in advance and more all-encompassing the planning process, the greater and sooner the ability of a force to impact a target environment. Additionally, this section highlights several useful considerations that guide effective C2 system planning.

1. Centralized, Collective, and Cooperative Planning

The process of integrating many smaller networks into the previously mentioned network of networks is inherently tedious, management intensive, and slow. It is also an iterative process that produces necessary adjustments as the operation's objectives, tempo, and participants change.

Moreover, planning must include as many of a coalition's participants, in a coordinated fashion, as early and as often as required. Through engineering, currently fielded equipment is technically interoperable. however, the manner in which the network is established, operated, and maintained may hinder interoperability. Often, key personnel and or units are not identified sufficiently far enough ahead of time to ensure that all participants communications concerns are addressed, which causes the potential need for adjustments at a later time. However, such a comprehensive and inclusive planning process will ensure, to the degree possible, that the collective needs of the coalition are met, and will identify shortfalls at a relatively early stage.

Centralized planning of communications is imperative to ensure that the needs of the entire coalition are met. Operations which are in transition, or involve multiple levels of command, such as recent operations in Somalia, however, often make centralized planning difficult to achieve. During RESTORE HOPE, a team was detailed by USCENTCOM/CCJG to visit Somalia to gather data and write a statement of work (SOW) for a UNISOM II communications system. The team briefed its findings and recommendations to the then UNISOM I commander, Brigadier General Shaheen. The General supported the recommended approach, but informed the team that multiple communications proposals were being developed. Concerned that the fragmented initiatives would not provide common and consistent service across the required "customer base," he contacted the UN and effected the halt to all ongoing communications development efforts until the team could brief UN Headquarters in New York City, and a decision was reached. [Ref. 65:p. 20]

2. Situation Awareness

To make a painfully obvious statement, the amount of information known about a situation will largely determine how effective communications planners are in the first iteration of the process. This is important, especially because the initial response in OOTW like disaster and humanitarian relief often weighs heavily in the final toll in human suffering.

Situation awareness influences all aspects of communications planning, and is largely contingent upon accurate and timely intelligence and information flow. Issues such as potential mission, state of the target environment, identification of participants, and required communications links are important in being able to provide the commander with adequate system capacity and connectivity.

OOTW, however, do not always allow for a clear and complete array of information, especially as pertains to the nations and organizations expected to

participate in the coalition. Alliances, such as NATO, involve well established and practiced, albeit imperfect, procedures and relationships between known partners. This is a luxury absent in many OOTW.

Although the location of the crisis is not predictable, general estimations as to coalition participation are possible, and a certain degree of communications planning can happen in advance of a crisis. Knowing possible coalition partners will also allow appropriate agencies and sections to effect adequate planning from the onset of a situation.

As with many other aspects of coalition operations, the US does not adequately understand the communications limitations and capabilities of all participants. To the author's knowledge, no efforts are underway to systematically develop a repository of information that would alleviate certain aspects of the mystery from coalition planning. As an intermediate objective, US forces should begin compiling a data base that outlines hardware/software/protocol specifications/standards of all potential coalition participants, as well as NGOs.

In a perfect world, once the participants and concept of operations is established, C2 systems developers can assess critical information paths, as well as identify the required medium of communication (i.e., voice, data, imagery, etc.). Subsequently, planners can match resource requirements with resource availability (including host nation infrastructure assets, if appropriate), and identify anticipated shortfalls.

The holistic and collective nature of this process cannot be overemphasized. Planners have to consider not only what they intend on introducing into the environment, but also what capability is already present in the environment.

The potential for conflict between those communications systems resident in an operational environment and those yet to arrive is an important

consideration. Other organizations may be on the scene well in advance of the arrival of the military. A significant communications related difficulty in RESTORE HOPE was the frequency deconfliction with the NGO communication systems. In a humanitarian relief operation, especially where little indigenous communications systems exist, deconfliction with support agencies is critical to avoid degradation of NGO services for relief, as well as safety. As US and coalition forces built up in Somalia, frequency interference increased. [Ref. 65:p. 19]

3. Sequencing

Understanding the approved campaign plan will facilitate appropriate sequencing of equipment. Commanders often face difficult choices between combat power and communications capability as regards the mechanisms for introducing the two into the operating area. Planners must ensure that communications resources are available in concert with the sequential requirements of a force.

Thorough comprehension of the expected chronology of a force's communications requirements will prevent planners from force feeding unnecessary communications resources into a theater. This is important because unnecessary equipment may create perceptions that the US "intends on taking over," and also because of the potential to tax a fragile infrastructure. Further, it reduces the logistics difficulties in moving additional equipment, should conditions warrant. [Ref. 67]

4. Flexibility

The lack of information in a crisis situation is a serious impediment; it is also a reality that planners must deal with. Additionally, it is logical to assume that as operations progress and information becomes available, details

concerning communications requirements will change. As a result, an iterative process, is required to adapt to the situation as it develops.

Initially, forces must plan to provide all aspects of their own support unless circumstances dictate otherwise. Planners may have insufficient detail to assess the capability of a host nation infrastructure to provide any level of support in a given scenario. In many circumstances, such as existed in Bangladesh and Somalia, the infrastructure of the respectively ravaged countries was unable to provide any sort of foundation to assisting forces and organizations.

> There was no government, power supply, telephones, water, sanitation, ATC facilities, navaids or radars. Each military element was totally dependent upon its own assets; Somalia could provide nothing. [Ref. 33:p. 2]

Planners must also take care to build in for growth. Many countries and organizations may be reluctant to participate initially, until the operations chances for success become more clear. They don't want to become involved in a situation that is unpopular at home. Consequently, anticipate that the coalition will shrink and expand. To the degree possible, a modular approach is required to facilitate easy plug in and disengagement from the communications backbone.

Furthermore, OOTW often involve a change in mission. The supporting architecture must be sufficiently robust to adjust to the dynamic environment prevalent in OOTW. Resource limitations, however, often limit the degree of flexibility inherent in any architecture. These effects are magnified in the early stages of an operation when follow on or augment equipment is yet to arrive. Under I MEF equipment allocations at the time, a failure in the single AN/TSC-85B would have posed catastrophic consequences for force C2. Had elements of I MEF rear been tasked with additional missions, they would have had no means to effect long haul communications connectivity. [Ref. 65:p. 9]

5. Transition

Eventually, once the crisis is contained, US forces will turn the operation over to appropriate agencies, and retrograde. Significant consideration as to transitionability of a system is required from its inception. Forces must redeploy, leaving sufficient communications capability (backbone) intact to allow those assuming responsibility for the operation to conduct their mission. As the US military often provides the backbone communications for these operations, planners must allow for this eventuality and plan accordingly.

For example, communications planners for OPERATION RESTORE HOPE developed a detailed plan for transition to the UN that left the required connectivity intact. UNITAF transition to UNISOM II was carefully choreographed and incrementally achieved, giving the relieving organization (the UN led coalition) adequate time to bring their system up on line. [Ref. 68]

E. PLANNING EQUIPMENT DEFICIENCIES

A discussion of the difficulties involved in command and control architecture would not be complete without a brief overview of some of the dilemmas present in the World Wide Military Command and Control System (WWMCCS). WWMCCS provides the means for strategic and operational direction and technical administrative support for the command and control of US military forces. WWMCCS ensures effective connectivity among the NCA, the Chairman of the Joint Chiefs of Staff, and other components of the NMCS down to the Service component commanders. WWMCCS also provides communications functions that assist in the coordination and exchange of essential command and control information. [Ref. 16:p. VI-2]

The heart of WWMCCS is the Joint Operation Planning and Execution System (JOPES), an automated tool that the CINCs and services use to access and manipulate time-phased force and deployment data (TPFDD). The TPFDD

is a key product produced through JOPES, and consists of the computer database that supports an operation plan (OPLAN). The TPFDD defines the forces for the OPLAN and when those forces are scheduled to flow into the theater of operations. The TPFDD also includes movement, personnel, and cargo data associated with deploying units, in-place units, and associated sustainment resources. The database provides routing information and supports estimates of transportation requirements. To simplify the identification of forces in the TPFDD, combat, combat support, and combat service support forces, personnel, and supplies are linked together in groupings known as force modules. [Ref. 69]

There are many problems forces have experienced in using these command and control planning tools, however. The biggest weaknesses are the limitations posed by not having sufficiently trained personnel who can operate WWMCCS and JOPES. These systems are not "user friendly," and skills are extremely perishable. The lack of expertise with these tools precludes optimized planning and deployment of US forces, a situation noted in both PROVIDE COMFORT and RESTORE HOPE. [Ref. 70]

These difficulties posed planning and deployment problems for US forces in both PROVIDE COMFORT and RESTORE HOPE. In PROVIDE COMFORT problems included misunderstanding the capabilities and limitations of the system, failure to comply with requirements of the system, and attempting to work around the system. It was evident throughout the operation that a number of commanders and commands did not understand the systems function. During RESTORE HOPE, I MEF had no WWMCCS or JOPES trained personnel. Consequently, planners were initially putting a TPFDD together with "stubby pencil." [Ref. 48:p. 20 and Ref. 70]

Lack of training and familiarity with WWMCCS also effected forces during other phases of the Somalia deployment, as equipment and personnel to install,

operate, and maintain a WWMCCS connection did not arrive in country until almost a month after the flow began. Hence, WWMCCS could not be used to affect the flow from in theater. CJTF had to work issues concerning the flow of personnel and equipment from Somalia to Camp Pendleton and then into WWMCCS. [Ref. 65:p. 6]

F. CONCLUSIONS

Establishing an adequate command and control architecture in operations other than war is fraught with complications. Problems ranging from equipment interoperability rooted in acquisition history, to the inability of various coalition partners to agree upon and follow standard procedures, provide more than adequate challenge for communications planners. Some of these challenges have been, and will continue to be met should current trends in ad-hoc coalition relationships continue.

However, the most significant impediments in communications planning for OOTW involve the same issues that this thesis has identified as key for both command and control and intelligence considerations- doctrine and planning.

Logically, forces plan and execute best in a familiar environment. Doctrine and procedures are developed to support that environment. As discussed, OOTW introduce many unfamiliar complexities that planners must adjust to if sufficient communications support is to be provided.

In the author's opinion, current doctrine and associated planning procedures are not robust enough to handle the diversity of OOTW. Many doctrinal considerations, such as extension of the DCS, require the time it takes to replace "un-interoperable" systems to resolve. However, a common approach is required to ensure centralized and holistic communications planning, in order to plan for interoperability in advance of crisis or, at least, to reduce the degree

of "ad-hoc" and resulting communications crisis management experienced in recent coalition participation in OOTW.

VII. THE NEW FRAMEWORK

A. INTRODUCTION

1. Purpose of the Chapter

The purpose of this chapter is to present a useful framework for approaching command and control and its associated components in operations other than war (OOTW). As discussed, OOTW have many unique and complex aspects that, in certain respects, require an approach fundamentally different than that outlined in current doctrine.

The framework presented here is called the "coordination, cooperation, and consensus (CO^3) loop," for reasons that will become evident later in this chapter. It is a concept oriented, decision and capability based approach that allows planners a holistic view of the conceptual, environmental, and architectural aspects of command and control in OOTW. It is intended as an augment to current crisis and deliberate planning processes, and, potentially, as a baseline for developing future common doctrine for OOTW.

2. Summary of Lessons Learned

This thesis has presented the challenges and shortcomings of the current US and coalition approach to command and control and its inextricable elements, intelligence and communications, in operations other than war. The author discussed several of the issues that "sub-optimize" command and control in this environment. In all three areas of discussion, a common theme surfaced-existing doctrine does not adequately addresses the numerous dimensions, complexities, and peculiarities that exist in OOTW. In short, forces and organizations are not accustomed to having to include so many other

participants and unfamiliar operational considerations into their strategic, operational, and tactical plans. A summary of the lessons learned follows.

"Coordination, cooperation, and consensus," or CO^3, more appropriately captures the central concept regarding how coalition participants are able to organize and conduct operations in the irregular environment. Traditional military perceptions of command and control, as developed in existing doctrine, have several inadequacies.

Joint doctrine has not yet taken root and replaced the atmosphere of inter-service competition that permeates any operational environment. The lack of a joint strategic paradigm causes problems of varying degree for US forces in almost any operating environment, both from a command and control perspective, and in the intelligence and communications arenas.

Unity of command is a central tenant in current conventional doctrine, but has limited applicability in OOTW, where politics often supersede operational logic and sensitivity to coalition participant perceptions is potentially more important than engaging in the most direct road to success.

Further, unity of command was really never achieved in any of the operations discussed in this thesis. Even though some relationships and interoperability within a coalition are prearranged through treaties and standard agreements, large portions of coalition interaction are developed ad-hoc. Many nations are reluctant to place their forces under the control of other nations. Additionally, many organizations that participate in OOTW have no legal obligation, and in fact posses a historical aversion to working with military organizations.

The problems experienced with communications and intelligence follow a similar but slightly different path. Structure and doctrine both impact the ability of the communications and intelligence community to provide support to the

coalition. Of course resource incompatibilities and security concerns also determine certain measures of support available.

A more serious impediment, however, has surfaced with the ability of these communities to approach these operations with a holistic view. The noted deficiencies in US understanding of cultural and allied characteristics stem, at least partially, from the fact that conventional and or unilateral action, upon which the preponderance of US (and most other nations military) doctrine is established, do not involve the variety, breadth, and depth of circumstances and players present in OOTW. The result is planning that is too narrow in focus.

A force's ability to exercise command and control depends upon intelligence, which depends upon a C^2 system, which depends upon command and control. The intelligence community is not accustomed to having to consider weather, starvation, or other obscure threats as the enemy. Conventional operations also do not require the same degree of political sensitivity and cultural understanding. Civilian population centers and composition are historically low priority issues in the conventional arena. The enemy's ability to wage war is the combatant force's target. In OOTW, however, the civilian population is the target. Cultural norms, customs, traditions, and religion are all essential elements of information in formulating appropriate plans.

There is also inadequate foresight into planning to work with the various participants. Identifying capabilities, limitations, doctrine, equipment, and areas of specialization of the myriad of players happens after the fact, and after the attempts to create a viable architecture are already well under way. This is important, as each participant brings a unique perspective concerning its objectives, required resources, and methodology to a given situation. Accordingly, creating a suitable architecture is a complex undertaking.

3. The Need for a New Framework

In the OOTW arena, there are three key lessons taken from the operations discussed in this thesis. First, the formulation of a clear and precise mission statement which defines measurable and obtainable objectives is paramount. Second, the objectives will drive the number and types of forces required for a particular set of circumstances. Finally, developing a comprehensive strategy that coordinates all instruments of national power- not just the military- greatly enhances the probability of achieving the stated objectives. [Ref. 40:p. 63] This closely parallels the prerequisite questions posed to a command and control problem solving process, as develop in Chapter II.

The thesis has shown that the working relationships developed in the three primary case studies, although problematic in many respects, were sufficient to allow the coalitions to make significant impact in the target environment. Cooperation, coordination, and consensus were critical elements in the qualified successes achieved. To varying degrees, the forces in these operations were able to develop consensus, coordinate interoperability, share equipment, and resolve any other political, procedural, or doctrinal issues.

These accomplishments, however, were not gained easily. Only through a tremendous amount of ingenuity, creativity, hard work, and compromise were adequate conditions established to permit the outcomes achieved. There remains a distinct lack of a common methodology for approaching C^2 considerations in an environment that involves the diverse array of participants historically represented in OOTW.

The potential number of combinations of "who will operate with who" in future coalitions is unknown. If put in perspective of the Cold War, recent coalitions have produced some very unlikely bed fellows, both in and out of the realm of OOTW. For example, who ever thought that the US and Syria would be allies, as occurred in Desert Shield and Storm. Further, it is probably too much

to expect that every country, organization, and military force in the world will agree upon a single best way to perform a particular function, or upon the single best piece of communications equipment for a certain requirement. Political, doctrinal, and resource distinctions are a fact of life that, while flexible to a degree, will likely continue to present challenges to interoperability and other aspects of working together.

There are some elements of OOTW, that are known, however. Forces must still sense, compare, decide, and act in order to create the desired changes in the target environment. The cybernetic C2 cycle still pertains to any participant in any operation. Although individual participants may not agree on a standardized mode of operations for all situations, perhaps establishing a shared view of the problem solving system and the position and composition of their respective command and control cycle, within the coalition, is possible.

The crux of the command and control problem in operations short of war involve paradigm, absence of a holistic view, and planning. A shared view of how the problem solving system is developed will provide a greater degree of interoperability and a decreased amount of ad hoc planning. If participants can agree upon the issues and concerns that must be addressed prior to embarking upon an operation, perhaps a greater and more rapidly achieved level of impact is obtainable.

In the author's opinion, much of a coalition's strength is derived from its diversity. No one organization can act as a panacea for all of the worlds woes, both as is related to waging war and waging peace. In order to capitalize upon this diversity, however, a common approach that reflects the cooperative, coordinative, and consentual nature of future coalitions, and that allows coalition participants to think through the potential trouble spots both prior to and during OOTW is required.

4. Objective

The ultimate goal of the framework presented is the development of a seamless, efficient, and effective coalition command and control process oriented towards a collectively determined objective. The process should blend the resources, capabilities, limitations, and political desires of individual coalition participants into a synergistic and complementary whole. An optimal command and control process should consider the interrelationship and interdependencies between coalition components and position physical entities and functionality accordingly.

5. Methodology

In presenting this framework, a brief discussion of the heuristic after which it is patterned is provided first. Then, an overview of the structure, purpose and assumptions relevant to the CO^3 loop is presented· Finally, a detailed discussion of each module in the step by step process is submitted. Although this framework is oriented and developed specifically with respect to operations other than war, in the author's opinion, it is largely applicable to any sort of military operation.

B. THE , COORDINATION, COOPERATION, AND CONSENSUS (CO^3) LOOP

1. Origins

The CO^3 Loop is largely patterned after the Modular Command and Control Evaluation Structure (MCES). The MCES is a general approach to evaluating command and control systems which has been successfully applied to a number of issues concerning C^2 system planning, acquisition, testing and operation. It augments traditional analysis by providing a series of seven steps or modules to evaluate alternative C^3 systems and architecture's. These

modules guide analysts who may otherwise focus prematurely on the quantitative model rather than the problem definition and the specific measures needed to discriminate between alternatives. MCES was developed by a team of experts from industry, government, and academia and was endorsed by the Military Operations Research Society. It presents difficult concepts in a standardized way that is easily absorbed by both new practitioners and managers. [Ref. 71:pp. 1-2]

2. Purpose

The CO^3 loop is a problem solving process that provides a holistic and standardized methodology that coalition participants can use to frame the command and control problem in OOTW. It is called the CO^3 loop because one or more of the "CO's" is required at each step to reach an amenable and adequate arrangement for all members of the coalition. It does not replace the generic command and control process, but rather establishes a method by which to ensure that the C^2 process, for both each coalition participant and the coalition as a whole, is positioned in a manner appropriate for prevailing conditions. This framework is, in the author's opinion, a reasonable representation of the logical and chronological progression of decisions and discovery a coalition must follow to optimally establish and execute command and control in the OOTW environment.

Circumstances and mission parameters will change during the course of an operation. Hence, the iterative nature of the cycle allows the coalition to adjust its command and control problem solving process as the situation requires. It may be employed during, before, or after an operation, and has applicability to a wide range of military operations. Many of the key functions and objectives within the modules already exist as a portion of traditional staff planning. The new framework, however, is intended to provide for a more holistic and all-encompassing assessment that forces participants to consider the

capabilities and resources of other potential coalition partners, as well as the effect of the OOTW environment on their respective operational bias.

3. Overview

The CO^3 loop is depicted in Figure 4, and shows a "roundtable" of coalition decision makers and their relationship to the serially arranged series of

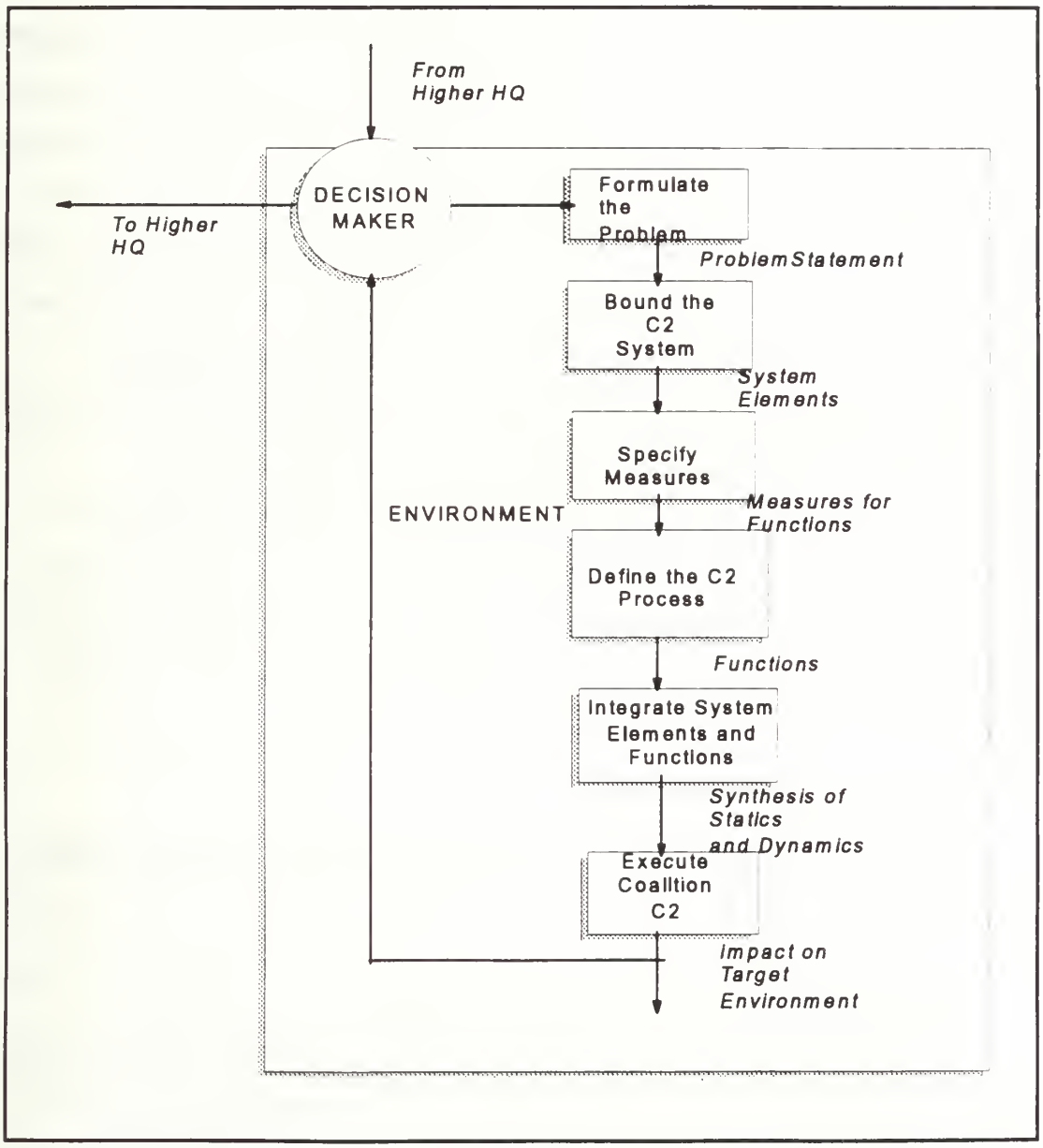

Figure 4. The COordination, COoperation, and COnsensus (CO3) Loop

six steps that make up the loop. From the round table is an output that shows an information feed to the respective "higher headquarters", as appropriate. Obviously, in most situations, more than one branch of output is required. Additionally, an input arrow feeds from the "higher headquarters". A simplistic description of the modules is provided below.

The loop itself is comprised of six functional steps that will be described in modules. The CO^3 loop begins by identifying the overarching problem that the coalition wishes to resolve. There are several sub-problems involved, that will be discussed in the detailed description of the modules. The second step identifies the composition and boundaries of the C^2 system. The third module develops measures of force effectiveness (MOFE) for each of the objectives, that allow the coalition to determine whether the objectives are being met. Fourth, a dynamic framework that identifies the relevant C^2 process functions (as most often represented by the generic C^2 loop) is established. Fifth, steps two and four are integrated, allowing the coalition to identify the interrelationships and interdependencies between the physical entities and structures, and the C^2 processes or functions. In the sixth, and final module, the respective coalition participants execute their respective command and control cycle, the impact on the target environment is assessed and fed back to the "round table," and the process iterates until the appropriate end state is reached.

4. Description of Modules

The CO^3 loop modules are presented from the perspective of a JTF commander.

a) Module 1: Formulate the Problem

Module 1, as depicted in Figure 5, may more appropriately be called "political preparation of the battlefield" (PPB). Problem formulation in OOTW is, by far, the most political and difficult of the functions in the CO^3 loop. It is also

the most important. The output of this module is a clear and concise articulation of the mandate, the intermediate objectives, and the desired end state.

In this module, US forces receive overall policy guidance from the strategic level, and will analyze this mandate for both explicit and implicit missions and tasking. The full range of potential coalition partners and their respective political agendas are then identified, and a "core" of decision makers

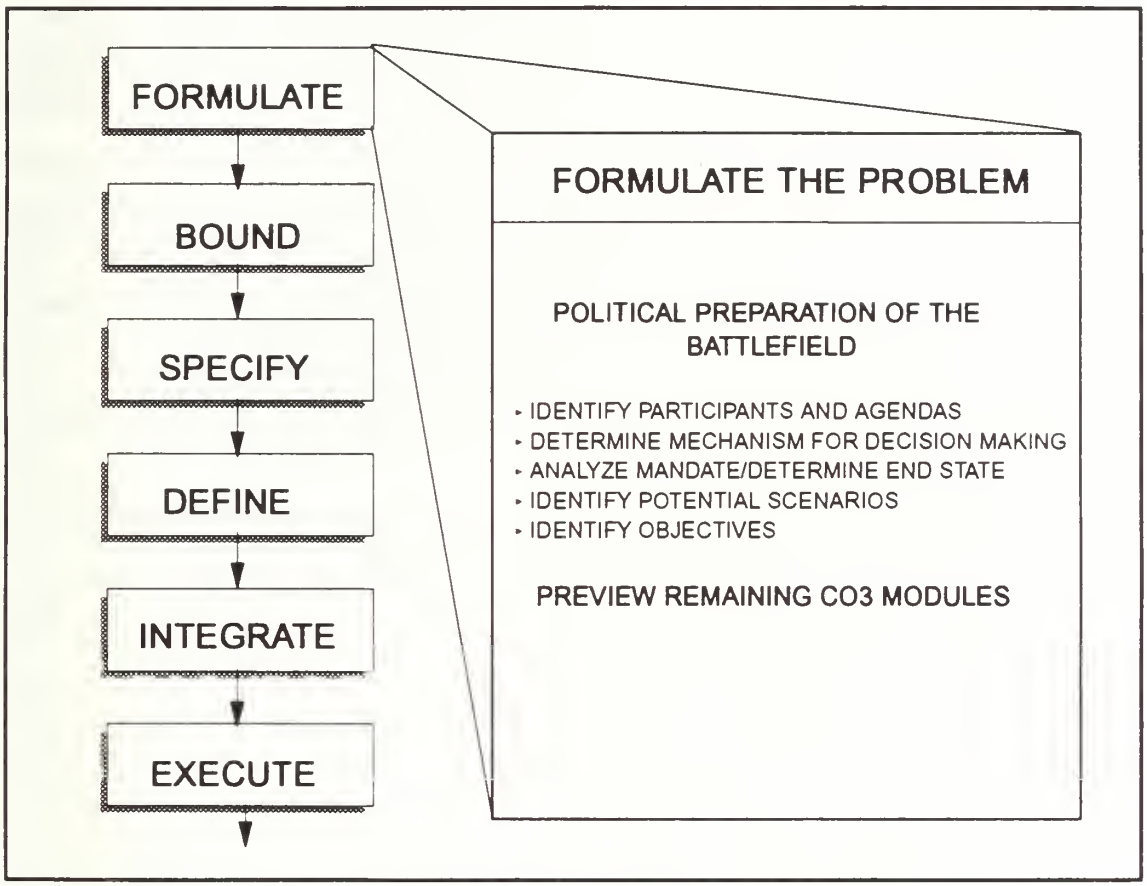

Figure 5. Module 1: Formulate the Problem

is formed. The mechanism for decision making is also identified, whether via single headquarters, coordinated meetings on a twice weekly basis, or communication via liaison. Consensus is then reached with fellow coalition partners as to a common interpretation of the mandate, as well as the desired end state. Sequential objectives are then charted to reach the determined end state.

The objectives the coalition problem solving system will address must be developed in accordance with the "do-ability" criteria previously discussed in this thesis. Wanting to do something, and having the resources with which to do it are two very important, but separate, matters. Coalition forces must ensure that they both want to do something, and have the resources with which to accomplish a particular objective in order to prevent the "mission creep" syndrome that some previous coalitions have experienced. The timing, scope and criticality of the required coalition action will also drive the determination of the objectives, to a degree.

This step should also include an initial iteration through all of the CO^3 modules to provide planners with an initial perspective on potential problems and solutions as early as possible. In the implementation of this step, the answers to several questions may help formulate the problem. In implementing this step, the answers to several questions may help achieve a clearer picture of the problem:

- Who are the decision makers, and how and when are decisions made?
- What is the nature of the mission and the operating environment, and what types of forces are likely to be required?
- What is the current state of the target environment?
- What is the desired state of the target environment?
- What viewpoints must be addressed to achieve an amenable solution?
- What are the basic assumptions of the problem? What is the history? How has the problem, historically, been solved?
- What are the existing and potential threats?
- What are the existing and potential scenarios?
- What is the time frame in which this mission must be accomplished?

In summary, three major steps take place in Module 1: (1) the coalition participants and the general manner in which coalition decisions are

made is identified; (2) consensus concerning the nature of the mandate is reached, and objectives are defined to achieve the agreed upon end state; (3) the remaining modules are previewed for potential problems to provide planners with as much lead time as possible to find solutions.

b) Module 2: Bound the C2 System

Module 2, as described by Figure 6, outlines the relevant system elements that bound the problem of interest. The first goal is to differentiate between the system and its environment. The JCS definition for a command and control system, as provided in Chapter II of this thesis, is useful in conducting system bounding. The definition established that a C^2 system consists of (1)

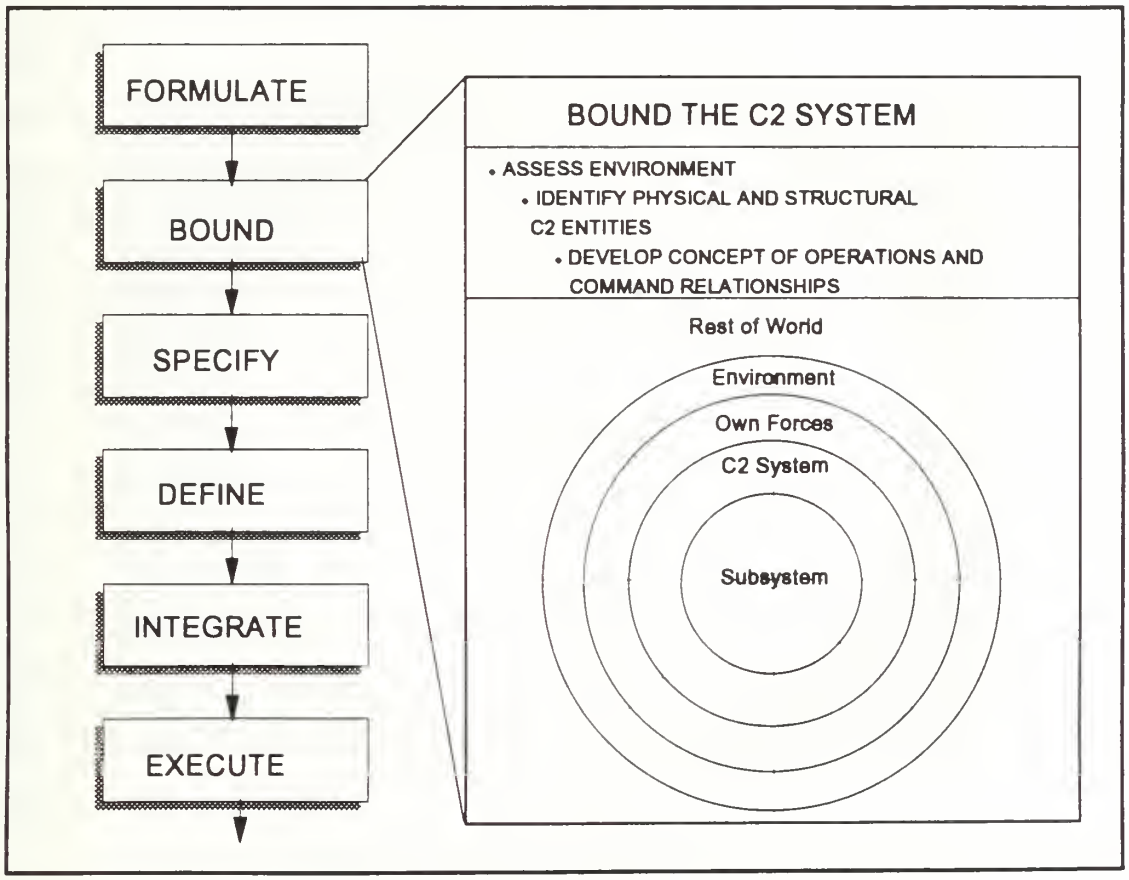

Figure 6. Module 2: Bound the C2 System

physical entities- equipment, software, and people, and associated facilities; (2) structure- organization, concepts of operation, standard operating procedures,

and patterns of information flow; and (3) process- the actual functions, actions, and impact of the system. [Ref. 71:p. 5]

This module identifies the C^2 system by its physical entities and structures and associates it to the forces it controls and the environmental stimuli to which it responds, including the threat. Once the aggregate system elements are identified, the physical and structural entities may be further bound by placing them in the appropriate level of the diagram represented in Figure 7. This series of levels, or "onion skin" graphic, has five rings in its most inclusive depiction, and represents an all-encompassing perspective of the factors bearing on a particular operational problem.

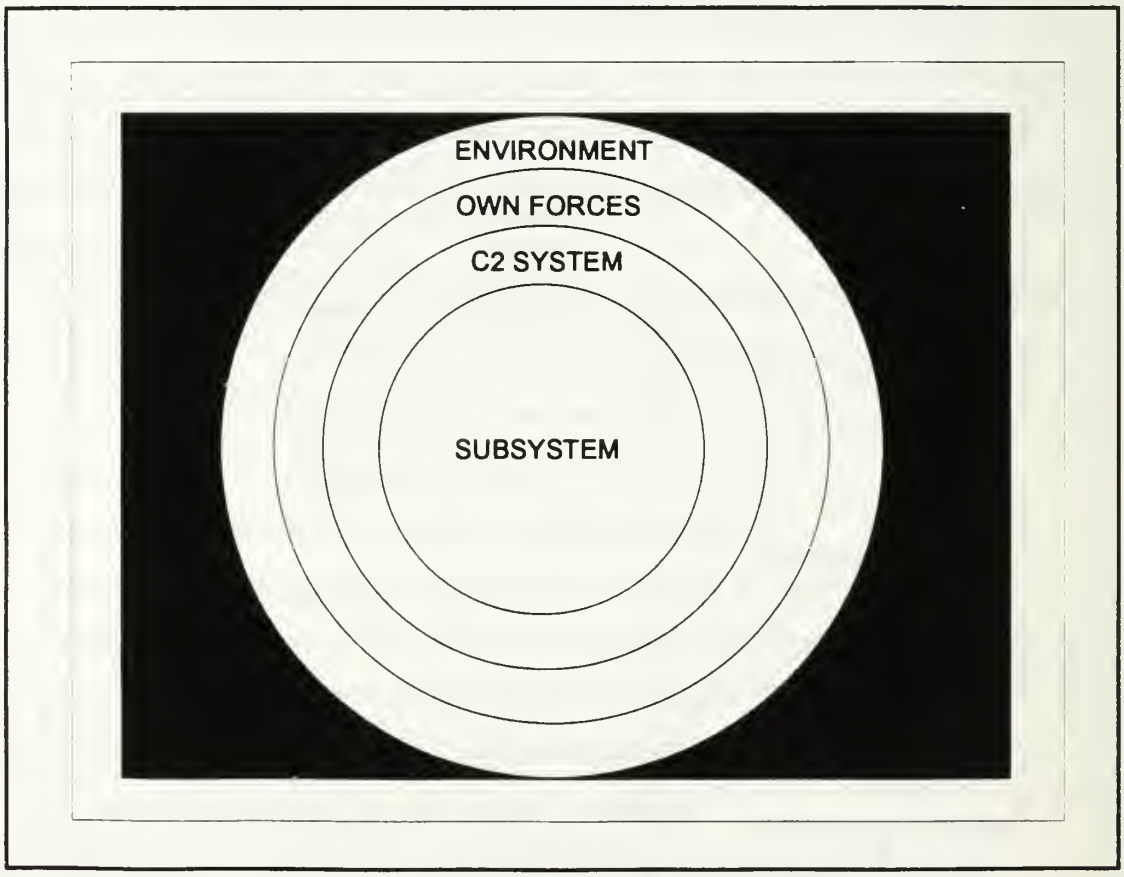

Figure 7. C2 System Bounding and Levels of Analysis

Beyond the outer ring is "the rest of the world." Elements and structure that exist, and may have importance with respect to similar problems,

but which are outside the scope of the immediate problem facing a particular coalition are contained in this layer. An example of the potential contents in this region may include such events as the development of another crisis in a different region, which may divert resources to the specific problem in focus.

The outermost ring of the "onion" represents the environmental factors that impact the problem This ring encompasses the major scenario components in an operation, initially with regard to the current situation within a target environment. For example, "the Kurdish rebellion spawned an Iraqi retaliation, which forced a mass Kurdish exodus to the mountains on the Turkish and Iranian borders. The refugees have no food, water or shelter, and hundreds are dying every day," encapsulates the many key elements of the crisis. Identifying causes and effect linkages in an environment is a critical function in this layer. In line with the example provided, the history of the region, culture of the people, and likely scenarios must all be assessed. Intelligence obviously has a substantial role to play in this ring. The coalition must collectively identify what it knows and what it does not (but must) know, as well as make assumptions concerning possible scenarios. The "macro"-essential elements of information (EEIs) are identified in this layer.

Moving towards the center, the next ring deals with the forces and organizations which comprise the coalition. The pie wedge sectors which divide this and all subsequent rings of the onion skin diagram convey the notion that the coalition is comprised of a system of interrelated systems, and that each participant has its unique physical and structural entities which it brings to an operation. The C^2 systems of the individual participants is the focus of the next ring, and the sub components of these systems make up the inner most ring.

The identification of the physical entities that comprise a coalition's respective "firepower" provides coalition leadership with a general understanding of whether or not it has the required resources with which to

accomplish the mandate, and subsequent objectives. Requests are made to higher authority to fill critical shortages. If resource constraints cause previously identified mandate and objectives to fail the "do-ability" analysis, the mandate and objectives may require reevaluation.

Once coalition decision makers are comfortable that sufficient resources exist within the coalition, a concept of operations is developed that establishes appropriate command or cooperative relationships, and missions are doled out to respective participants. This entails hierarchical, dependent, or complementary organization of participants and subsequent mission assignment in manner commensurate with both political desire and capability.

In summary, within the second module of the CO^3 loop, a broad based assessment of the operational environment, and those elements with which the coalition must interact is presented; a static representation of the physical and structural command and control entities inherent in individual coalition partners, and the coalition as a whole, is assembled; and, a concept of operations that establishes appropriate command and coordinative relationships and missions for each coalition participant is created.

c) Module 3: Specify Measures of Force Effectiveness

Figure 8 shows Module 3, where coalition decision makers must specify the criteria that gauges the impact both of the coalition as a whole, as well as the individual coalition participants. Module 1 identified the coalition's overarching objectives. Module 2 resulted in assignment of missions, in response to the objectives determined in Module 1. In Module 3, a measurement for assessing the collective and individual contributions of coalition participants is required. These measures enable force components to orient their respective C^2 processes appropriately.

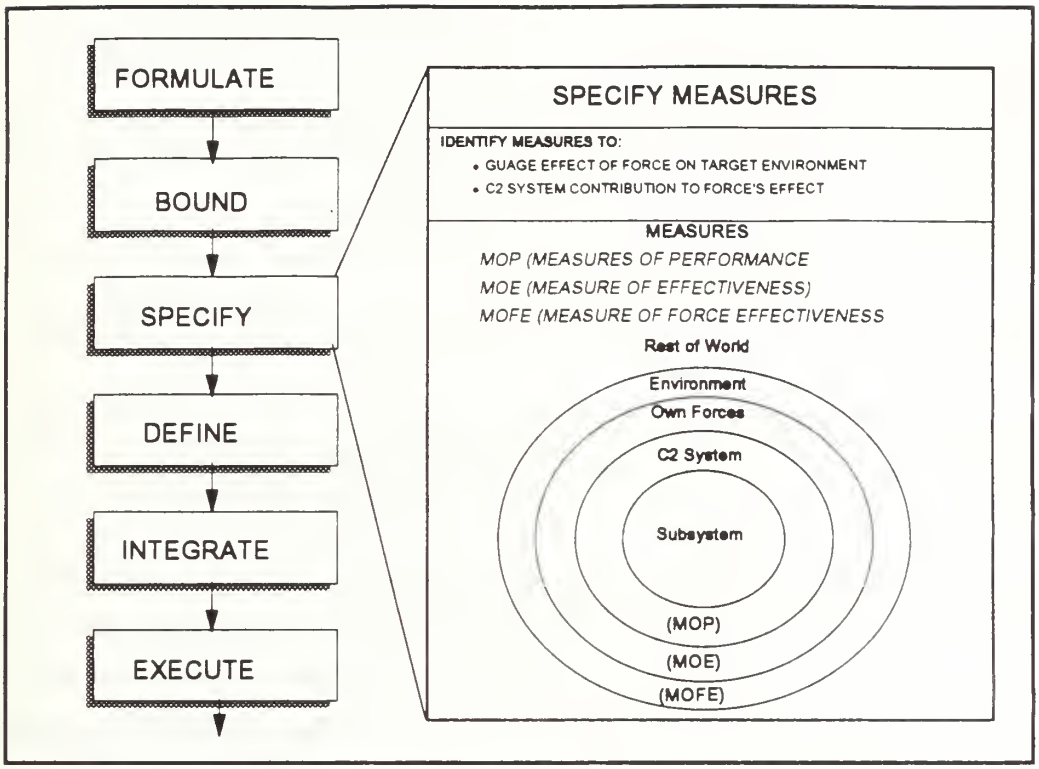

Figure 8. Module 3: Specify Measures

Traditional command and control systems analysis involves three primary measures: Measures of Force Effectiveness (MOFE), Measures of Effectiveness (MOE), and Measures of Performance (MOP). The three levels of the C^2 system in the onion skin diagram are associated with one of these measures, depending upon the layer. Determining the boundary of interest helps to determine what level of measure is required. For the purposes of this discussion, the boundary between the force and the environment, and between the forces and their respective C^2 systems are the boundaries of interest. MOFEs and MOEs , respectively, are the measures required.The preliminary iteration of the CO^3 loop, as recommended in Module 1, may provide an initial set of relevant measures. This initial set may be put through further scrutiny through comparison with the set of criteria established in Table 1, which may produce a more manageable set of measures. [Ref. 71:p. 13]

TABLE 1. CRITERIA FOR EVALUATION MEASURES

Characteristics	Definition
Mission-oriented	Relates to force/system missions
Discriminatory	Identified real differences between alternatives
Measurable	Can be computed or estimated
Quantitative	Can be assigned numbers or ranked
Realistic	Relates realistically to the C2 system and associated uncertainties.
Objective	Can be defined or derived, independent of subjective opinion
Appropriate	Relates to acceptable standards and objectives
Sensitive	Reflects changes in system variables
Inclusive	Reflects those standards required by the analysis objectives
Independent	Is mutually exclusive with respect to other measures
Simple	Is easily understood by the user

The remaining measures are then classified with regard to their level of measurement, and MOFEs are related to MOEs. MOEs are further mapped into MOPs in the MCES, which is beyond the scope of this thesis. Measures at the higher level, MOFEs and MOEs, are desirable because they are more closely related to the ultimate purpose of the coalition, and because they capture many of the implied lower level measures in a meaningful way. For example, an aggregate MOFE may involve something such as reducing the death toll in a specific crisis. An individual MOFE could include delivering a specific amount of food or medicine to a region. A MOE could consist of something like the number of requests for food and medicine a force's C^2 system can process per hour. This MOE is a critical component in achieving aforementioned MOFE.

To summarize, Module 3 results in the specification of a set of measures that allow coalition decision makers to gauge the effects of the force on the environment, and the contributions of the respective forces' C^2 systems to the forces' effects.

d) Module 4: Define the C2 Process

Module 4, as shown in Figure 9 focuses attention on the individual command and control processes of each coalition participant with respect to its given mission.

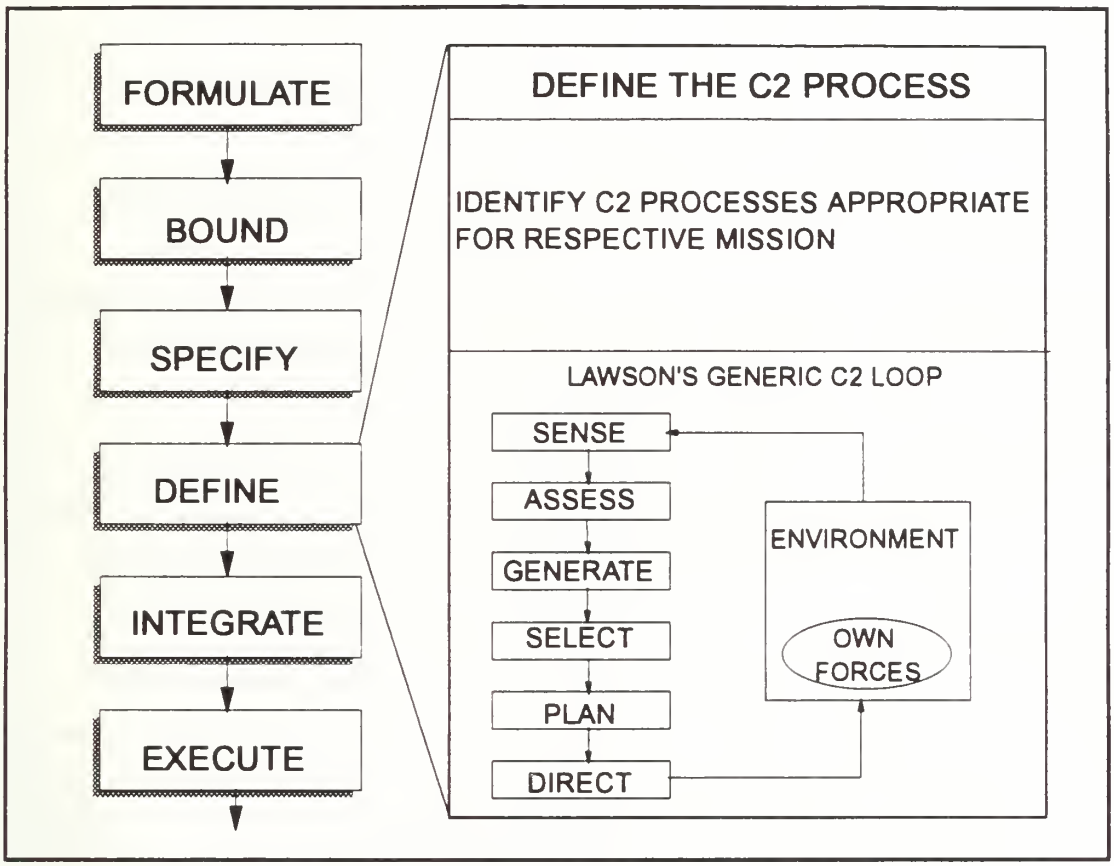

Figure 9. Module 4: Define C2 Process

Generally, the implementation of the CO^3 loop modules to this stage have resulted in an identification of: the mandate and objectives, system boundaries and elements, a concept of operations and command relationships, and criterion to measure force and C^2 system contribution.

Each participant, however, has a potentially different set of parameters within which to embed its C^2 system. Obviously, the missions given to a relief agency and a military force will vary, as will their respective command

and control processes. Implementation of this model is oriented towards ensuring that the respective systems are properly aligned.

Specifically, attention is directed at identifying three elements of concern: 1) the environmental "initiator" of the C2 process, which results from a divergence in the desired state of a target environment; 2) the internal cybernetic C^2 process (Lawson's Loop) as developed in Chapter II, and; 3) the input to and output from the internal C^2 process and the environment. As discussed, the C^2 process functions are generic, and may be adapted to comprehensively map to almost any C^2 process. They are also applied iteratively. The key element in implementing this module is understanding that it is geared towards identifying the "action-reaction" link of respective C^2 processes, and their intended impact on a target environment.

e) Module 5: Integrate System Elements and Functions

In Module 5, illustrated in Figure 10, the interrelationships and interdependencies between the physical entities and structures (defined in Module 2) and the C^2 processes or functions (described in Module 4) are identified and described. This is necessary to provide an overall perspective on "who does what, and when do they do it," among the coalition forces. In way of an oversimplified example, the output of a reconnaissance unit's directed action on the target environment-identifying the location and composition of hostile forces provides at least a portion of the impetus to an infantry battalion's C2 cycle, which will cause it to act on the environment- close with and destroy the enemy.

The second portion of the challenge, is identifying the manner in which the required information is transmitted from one participant to another. Information flow, as demonstrated, supports and spurs decisions and links the separate C^2 processes within the aggregate coalition architecture. As discussed in Chapter VI, critical links must be identified, and modes of communication

determined. Base upon this assessment, planners can determine the actions required to achieve interoperability and connectivity. Resource surpluses and shortfalls are firmly determined.

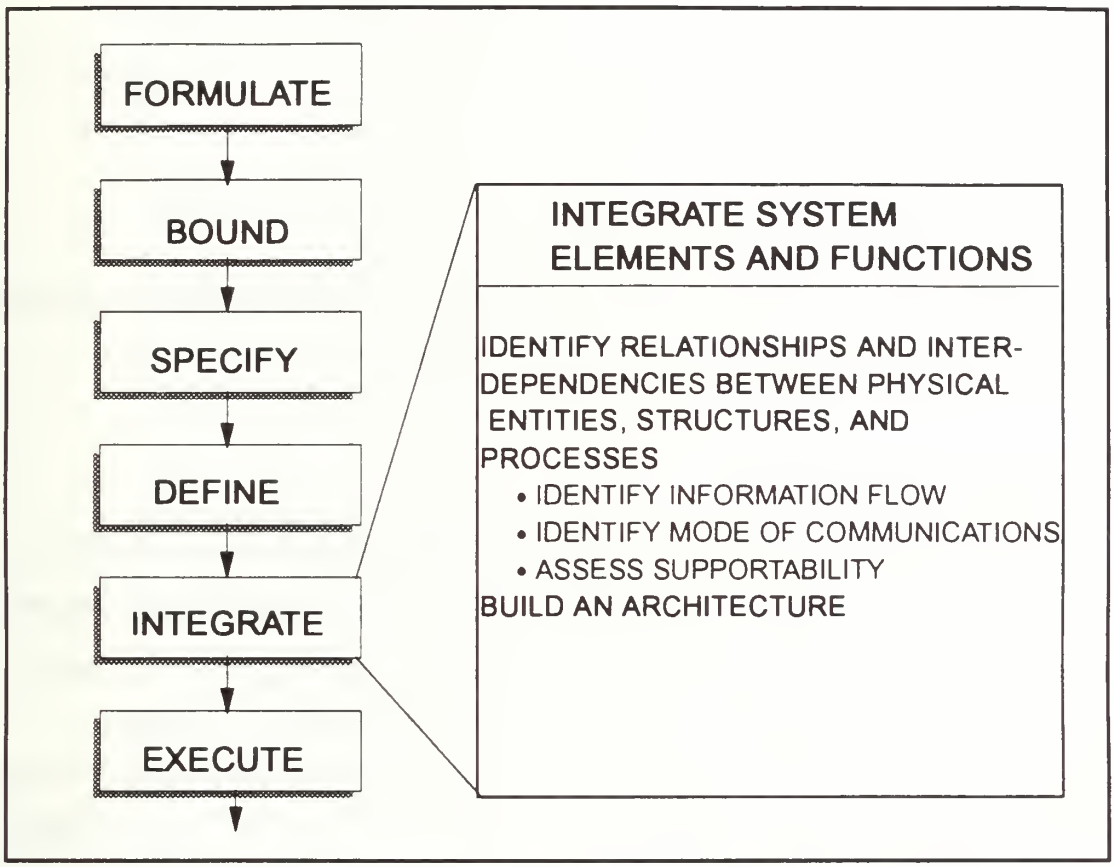

Figure 10. Module 5: Integrate System Elements and Functions

The final form of the architecture should at least consist of the process description of the system elements and their associated processes arranged in the structural framework depicted in Figure 6 and Figure 7.

In sum, this module maps steps two and four together to provide a cohesively linked C^2 architecture for the entire coalition. Both the static and dynamic characteristics of the architecture will change in concert with the operational circumstances and subsequent iterations of the CO^3 loop.

f) Module 6: Execute Coalition Command and Control

Once the architecture is established, having considered all participants and their respective capabilities, limitations, and political agendas, implementation of Module 6 is where the coalition members execute their respective command and control problem solving processes. As discussed, the individual missions assigned to participants are sub problems of the larger problem that is assigned to the coalition. The output of these respective processes, has some measurable effect upon the target environment. The "round table" of coalition decision makers determines if the coalition's end state is achieved. If it is not, the CO^3 cycle goes through another iteration.

C. CONCLUSIONS

In this chapter, the author developed a framework that provides coalition participants with a common methodology for approaching command and control considerations in operations other than war. The framework attempts to fill the gaps in existing doctrine, through ensuring that , to the degree possible, planners maintain a holistic approach to achieving command and control in the OOTW environment. As discussed throughout the thesis, there are a number of peculiar problems that OOTW present for US military forces. Entitled the COordination, COoperation, and COnsensus Loop (CO^3) loop, this new framework is intended to augment present crisis and deliberate planning processes. Through a series of steps or modules, the CO^3 loop provides planners a tool with which to establish, in logical and chronological fashion, an all encompassing perspective of command and control considerations in a particular operation. The framework is generic, iterative, and may be applied to a myriad of operations. Only broad based concepts are discussed in the approach developed, and further assessment of specific functionality within each module is required. Also, the author recognized that a sample application may enhance

the reader's level of comprehension of this process. Unfortunately, due to time constraints, this is beyond the scope of this thesis.

VIII. CONCLUSIONS AND RECOMMENDATIONS

A. SUMMARY

1. Command and Control Overview

Chapter II provided a broad discussion of the origins, nature, objectives, and principles that pertain to both command and control, and its inseparable components, intelligence and communications. Historical origins of command and control, as well as key elements of current military perceptions were discussed. Moreover, the critical notion of C2 as a problem solving process, that depends upon intelligence and communications is presented.

2. Operations Other Than War

Chapter III illustrated the unique environment of operations other than war and its relationship to traditional US command and control precepts. The chapter illustrated that several adjustments are required of the US military mind in order to more appropriately approach the "irregular" operating environment. In the author's opinion, US perceptions concerning command and control do not accommodate the political, environmental, and operational realities present in OOTW.

3. Command and Control Lessons Learned

Chapter IV provided a detailed discussion of the impediments and challenges to effective coalition command and control in OOTW. The absence of a common doctrine and its resulting effects on creating an appropriate operational mindset were discussed. Military commanders must recognize that coalition objectives in OOTW are achieved through coordination, cooperation,

and consensus, or CO^3, rather than through more hierarchically arranged, authoritative relationships. The need for more holistic approach is also discussed, as pertains to the need to address the political considerations of all coalition members when establishing coalition objectives, command and cooperative relationships, mission assignments, and rules of engagement. Decisions on these matters are developed collectively.

4. Intelligence Lessons Learned

Chapter V established that intelligence is critical to C^2 in OOTW, and the path to maximizing the potential of intelligence in OOTW is laden with obstacles. Again, current approaches, procedures, and methods follow historically ingrained patterns aimed at winning the Cold War. The intelligence community continues to adjust to the diverse requirements thrust upon it, and is still developing the framework necessary to provide appropriate levels of support in the complex and diverse OOTW environment.

5. Communications Lessons Learned

Chapter VI presented the challenges coalitions face in ensuring that critical and adequate communications are achieved between required entities. As with command and control, and intelligence, current doctrine falls short of what is required in the OOTW environment. Interoperability problems exist between US services, and are largely rooted in an acquisition history that follows the same divergent path as individual service perspectives on command and control. Continuation of current trends in the ad-hoc nature of coalitions will perpetuate the degree of interoperability experienced. Interoperability, as with other necessary ingredients in an adequate C^2 architecture require planning. Current doctrine and procedures do not appear robust enough to handle the diversity of OOTW. The need for a common, centralized, and holistic approach is established.

6. A New Framework

Chapter VII presented a new framework, the COordination, COoperation, and COnsensus (CO^3) Loop, which may prove useful as an initial foundation upon which to develop a common doctrine. It presents a standardized methodology that structures a coalition's approach to command and control in a holistic manner that more fully considers the peculiarities of OOTW, as well as the diverse nature of the forces within the operating environment.

The CO^3 loop provides a first step in eliminating the current ad-hoc manner in which coalition command and control is established. It provides a conceptual framework that is useful in mapping the interrelationships and interdependencies between the functions and physical entities, in order to ensure that the coalition's maximum potential is realized in as efficient manner as possible. Abstractly, it attempts to create a situation where, for a change, the value of the whole is equal to or greater than the sum of the parts. The CO^3 loop strives to instill this synergistic and complementary effect between coalition partners, and between the coalition and the environment within which it operates.

B. CONCLUSIONS

This thesis has discussed that the end of the Cold War has created a complex and varied environment within which US forces will operate. Both manmade and natural disasters are likely to continue, as the world adjusts to the disappearance of previously established boundaries. Consequently, US participation in operations other than war is likely to continue, and will likely occur in the context of a coalition environment. Currently, coalitions are developed on a largely ad-hoc basis. There is no common doctrine, at present, which provides a common approach or adequately addresses the uniqueness and diversity represented by coalition operations in the irregular environment..

The exact leadership role that US forces may play in a coalition will vary. However, US forces, especially as comprised in a Joint Task Force (JTF), are often a logical nucleus around which to form a coalition. Current US doctrine and perceptions concerning command and control, intelligence, and communications, however are based largely towards the employment of US forces in more conventional circumstances.

Through a combination of ingenuity and, often, enormous individual efforts, existing doctrine, procedures and approaches have, to a degree, sufficiently served to accomplish the tasks at hand. However, many problems and lessons are unnecessarily relearned with each new operation, potentially detracting from the speed and degree of impact the coalition can have on a target environment..

A common and standardized approach is required to blend the political agendas, capabilities, and limitations of a diverse coalition into an efficient and effective entity. Only through a methodical iteration of a process that logically, chronologically, and holistically frames and links the problem at hand, the resources arrayed to address the problem, and the functions that comprise the problem solving process, is this possible. This is the objective of the COordination, COoperation, and COnsensus (CO^3) Loop presented in this thesis.

C. RECOMMENDATIONS

The study of operations other than war is relatively new, as indicated by the comparatively recent efforts at developing doctrine to specifically addresses this environment. This thesis continues endeavors at identifying the impact of the irregular environment upon military operations, and recommending appropriate adjustments. The framework presented represents an initial effort at improving coalition approach to command and control in OOTW. General concepts and

functions were introduced. However, there are several areas that could benefit greatly by further research. These include:

- A more detailed and higher resolution functional decomposition of each module of the CO^3 loop.
- A more detailed assessment of current operational and tactical interoperability problems between US services, and the US and potential coalition partners.
- A comprehensive look at the UN command and control mechanisms, and associated problems.
- A more thorough enumeration of the political dynamics present in a coalition environment.
- A comparative analysis of various methods of establish the force composition and organization of a Joint Task Force.

APPENDIX A: CASE STUDIES

A. OPERATION PROVIDE COMFORT

As the Gulf War's fighting ended on February 28, 1991, a Kurdish rebellion erupted in northern Iraq. Iraqi forces attacked the Kurds. People fled from cities and towns. Worldwide television showed cold, wet Kurds suffering from hunger and disease and dying in the hills of northern Iraq and southern Turkey.

On April 6, 1991, USCINCEUR established JTF Provide Comfort. Initial objectives were to provide humanitarian relief by air dropping food and other necessities, establishing relief centers, supervising distribution of food and water, and improving sanitation and medical care. JTF Provide Comfort included USAF airlift, a special operations command, and an amphibious ready group (with an embarked Marine Expeditionary Unit). When it became apparent that operations would significantly increase in complexity and duration, USCINCEUR expanded the organization of the JTF, changed commanders to reflect the changed nature and increasing complexity of the operation, and established the JTF headquarters at Incirlik, Turkey.

The new JTF commander established two subordinate JTFs: JTF Alfa, a special operations task force, at Silopi, Turkey; and JTF Bravo at Zakhu, Iraq. JTF Bravo's mission was to provide security in its operational area inside Iraq, build refugee camps, and move displaced persons into these camps. JTF Bravo forces included the Marine Expeditionary Unit, a British Commando Brigade, a French Parachute Regiment, a Spanish Parachute Regiment, and US Army airborne infantry and attack helicopter battalions as well as PSYOP and civil affairs units. Ultimately, JTF Bravo included combat and combat support units from US and coalition member nations, including an Italian Composite Special

Forces Airborne Brigade, a Dutch Marine Combat Battalion, and an Infantry Rifle Platoon from Luxembourg.

Air Force forces (AFFOR) operated from Incirlik, and established and maintained an air exclusion zone over the protected area and coordinated air delivery. Army and non-US cargo helicopters were OPCON to COMAFFOR. Army forces (ARFOR) (less those in JTF Bravo) were also based at Incirlik. COMARFOR was also designated commander of a multinational support command, with OPCON of Army, Air Force, and Marine logistic units to support its multinational force.

PROVIDE COMFORT was a coalition effort. The United Kingdom, Spain, France, the Netherlands, Italy, Belgium, Australia, Luxembourg, Canada, Germany, and the United States contributed forces. The operation also encompassed United Nations relief assistance. The JTF became Combined Task Force (CTF) Provide Comfort.

Especially in its early weeks, PROVIDE COMFORT demonstrated the remarkable agility and flexibility of a team-oriented effort. The CJTF and subordinate commanders used Service capabilities where they were needed. They assigned clear (although not easy) missions; gave direct, simple guidance; and established command relationships that facilitated mission accomplishment. It was an outstanding example of the complexity of the end state and post hostilities operations. [Ref. 17:pp. V-7,8]

B. OPERATION SEA ANGEL

On April 28, 1991, a tropical storm began brewing in the Bay of Bengal. This storm, named Cyclone 02B picked up speed and power quickly, and on April 28th, slammed in to the Chittagong-Cox's Bazaar coast of Bangladesh. In the areas directly in the storm's trajectory, a wall of water 20 feet high swept inland three miles and completely inundated numerous offshore islands. This

event caused the majority of the mortality. By best government estimates, up to 138,000 lives were lost and 2.7 million people were rendered homeless and hungry. Most of these were squatters who farm the mud flats in the Bay of Bengal that stretch out from the Bangladesh coast.

The port of Chittagong, and much of the Bangladeshi Navy were destroyed. Hundreds of square miles of farmland and fish hatcheries were inundated, and over 100,000 head of livestock were killed. Further, may miles of earthen seawall were breached, making the coast even more susceptible to the normal sea swells from the Bay of Bengal.

By 11 May, a request for assistance had been received in Washington from the newly elected civilian government of Bangladesh. Upon approval of this request by the NCA, the Chairman of the Joint Chiefs of Staff tasked USCINCPAC with executing OPERATION PRODUCTIVE EFFORT (the name was later changed to OPERATION SEA ANGEL). The relief arrived in the form of a joint task force, commanded by Marine Corps Major General H.C. Stackpole, III.

By the next day, General Stackpole and key members of his staff were in Dhatka, Bangladesh, assessing the magnitude of the damage and determining the forces required to render appropriate assistance. The staff of the JTF was comprised of Marines and sailors of the III Marine Expeditionary Force, based on Okinawa, Japan, joined shortly thereafter by "jointness" experts from Hawaii. The rescue force also included Special Operations Forces personnel, who were skilled in dealing with emergency situations in emerging nations, as well as by five US Army Blackhawk helicopters.

The typhoon had cut off conventional voice radio and telephone contact with the American Embassy. Once the staff arrived in Bangladesh, a quick briefing with US Ambassador William Milam's country team, the government of Bangladesh, and non governmental relief organizations, such as CARE and the

Red Cross-Red Crescent, provided the JTF with an initial assessment of what assistance was required.

Relief supplies were in adequate supply. The difficulty was that the supplies were in Dhaka, and the hardest hit area was around Chittagong, 120 miles to the south. Distributing relief supplies would be a central challenge. General Stackpole and Ambassador Milam emphasized that the government of Bangladesh was in charge of relief efforts, and would set priorities during the operation. The JTF and supporting forces from other nations (including the British, Japanese, Indians, and Chinese) would provide transportation and medical services as required.

The Bangladesh government formed two coordinating committees. The one at the national level in Dhaka primarily set priorities for US C-130 flights to a forward staging base at the seaport of Chittagong; the second, at Chittagong, scheduled helicopter missions to the outlying islands and coastal regions where the aid was most desperately needed. The committees were composed of representatives of the Bangladesh civil government, Bangladesh military, NGOs, the JTF, and officials of the US Agency for International Development. Bangladesh officials chaired both committees and were responsible for designating priorities in the relief operations.

Further, a US Navy amphibious task group with the 5th Marine Expeditionary Brigade aboard was enroute back to the US, after participation in the Persian Gulf War, and was in the area shortly after the storm hit. This force remained offshore and contributed helicopters, medical teams and engineers as needed, but kept the US presence ashore to a minimum. The small force footprint was important in minimizing the culture shock between Western service personnel and local Bangladesh civilians who were unaccustomed to US technology, culture and customs. The ability to "sea base" the relief operations

kept the number of US personnel ashore at any one time to fewer than 500 of the 7000 US military members present. [Ref. 47 and Ref. 72]

C. OPERATIONS PROVIDE RELIEF, RESTORE HOPE, AND CONTINUE HOPE

Operations PROVIDE RELIEF and RESTORE HOPE demonstrated the complexity of integrating peace support operations with other types of operations and provided a glimpse of a new style of post-Cold

War military operations. By the middle of 1992, after years of civil war, drought, and famine, the situation in the southern half of Somalia had reached such a tragic state that humanitarian organizations launched a worldwide appeal for help. In response to this outcry, the President of the United States directed, in mid-August 1992, an airlift of food and supplies for starving Somali (Operation PROVIDE RELIEF).

US forces immediately initiated the airlift of relief supplies from Mombassa, Kenya, but continued instability in Somalia prevented safe passage of the flights. Relief workers in Somalia operated in this unsafe environment under constant threat. Distribution of relief supplies was haphazard and subject to banditry and obstruction by local warlords. The people of Somalia continued to suffer.

Based on the continued suffering and the realization that the United States was the only nation capable of decisive action, the President directed USCINCCENT to plan a larger scale humanitarian relief operation. On December 3d, the President directed USCINCCENT to execute Operation RESTORE HOPE. In broad terms, it was an effort to raise Somalia from the depths of famine, anarchy, and desperation in order to restore its national institutions and its hope for the future. Conducted under the auspices of the United Nations, Operation RESTORE HOPE was a multinational humanitarian assistance operation that ultimately involved more than 38,000 troops from 21

coalition nations, with an additional 9 nations providing funding, support, and facilities vital to the operation.

Unified Task Force (UNITAF) Somalia was formed with forces from France, Italy, Canada, Belgium, Egypt, Turkey, Saudi Arabia, and the United States, as well as other nations. On December 9, 1992, under UN auspices, US SOF and amphibious forces assaulted and secured the airport at Mogadishu and the seaport soon thereafter. Arriving supplies could now be off-loaded safely.

The task force methodically expanded throughout the capital city of Mogadishu and into the countryside. As land forces were added to the task force, control was pushed inland. The airlift of supplies increased significantly as air bases were secured. Over the next three months, the coalition expanded into the southern half of Somalia, establishing and securing relief centers and escorting supply convoys.

The operation was made more complex by continued uncertainty and instability in the Somali political situation. The task force, working closely with the US Department of State and eventually more than 50 humanitarian relief organizations, assisted in establishing an environment in which relief operations could proceed. Because of the proliferation of weapons throughout the country during the many years of civil war, relief efforts included the identification of individuals and groups that posed immediate threats and the removal of visible weapons from circulation. A radio station and newspaper were established to inform the public regarding the UN force objectives as well as public service information to enhance security.

As the situation was brought under control by military forces, priority shifted to diplomatic efforts to establish and maintain a lasting truce between competing factions. UNITAF Somalia was amended to include relief-in-place by forces assigned to the United Nations Operation in Somalia, now designated UNOSOM II. The distribution of relief supplies continued while great care was taken to ensure a seamless transition between UNITAF and UNOSOM II forces. UNOSOM II involves a much broader, "nation bulding" mandate, and is still active today. [Ref. 17:pp. V-14-V-16]

APPENDIX B: TYPES OF OPERATIONS OTHER THAN WAR

Operations other than war include, but are not limited to, the following types of operations.

A. ARMS CONTROL

The main purpose of arms control is to enhance national security. Although it may be viewed as a diplomatic mission, the military can play a vital role. For example, US military personnel may be involved in verifying an arms control treaty; may seize WMD (NBC or conventional); may escort authorized deliveries of weapons and other materials (such as enriched uranium) to preclude loss or unauthorized use of these assets; or may dismantle or destroy weapons with or without the consent of the host nation. All of these actions help reduce threats to regional stability.

B. COMBATING TERRORISM

These measures are both offensive (counter terrorism) and defensive (anti-terrorism) in nature. The former typically occurs outside the territory of the United States, while the latter may occur anywhere in the world. The Department of Justice, the Federal Bureau of Investigation, and the Federal Aviation Administration are actively involved in anti-terrorism operations. See Joint Pub 3-07.2 for more information.

C. DOD SUPPORT TO COUNTERDRUG OPERATIONS

The national drug control strategy (NDCS) is issued by the President pursuant to the Antidrug Abuse Act of 1988. The antidrug plans and programs of

the Department of Defense are an integral part of the NDCS and include detection and monitoring; support to cooperative foreign governments; support for interdiction; support to drug law enforcement agencies; internal drug prevention and treatment programs; research and development; and command, control, communications, and intelligence support. See Joint Pub 3-07.4 for more information.

The National Defense Authorization Act of 1989 assigned three major counterdrug responsibilities to the Department of Defense: acting as the single lead agency for detecting and monitoring aerial and maritime transit of illegal drugs into the United States; integrating the command, control, communications, and technical intelligence assets of the United States that are dedicated to interdicting the movement of illegal drugs into the United States; approving and funding State governors' plans for expanded use of the National Guard to support drug interdiction and enforcement operations of law enforcement agencies.

D. NATION ASSISTANCE

The main objective of nation assistance is to assist a host nation with internal programs to promote stability, develop sustainability, and establish institutions responsive to the needs of the people. Security assistance and foreign internal defense are the primary means of providing nation assistance.

1. Security Assistance

Security assistance refers to a group of programs that provide defense articles and services, including training, to eligible foreign countries and international organizations that further US national security objectives. Public law prohibits personnel providing security assistance services (including mobile training assistance) from performing combatant duties.

2. Foreign Internal Defense

Foreign internal defense (FID) supports a host nation's fight against lawlessness, subversion, and insurgency. US military support to foreign internal defense should focus on assisting host-nation personnel to anticipate, preclude, and counter these threats. Emphasis on internal defense and development programs when organizing, planning, and executing military support to FID programs is essential. Specific tools used in executing the DOD component of FID programs may include multinational exercises, exchange programs, civil-military operations, intelligence and communications sharing, logistic support of security assistance, and combat operations. See Joint Pub 3-07.1 for more information.

E. NONCOMBATANT EVACUATION OPERATION

The purpose of NEOs is to safely and quickly remove civilian noncombatants from an area outside the United States where they are, or may be, threatened. Although NEOs are principally conducted for US citizens, US Armed Forces may also evacuate citizens from host, allied, or friendly nations if the NCA determine it to be in the best interest of the United States. The Department of State has the lead in conducting NEOs. US ambassadors or chiefs of diplomatic missions are responsible for planning for NEOs by preparing emergency action plans to be implemented when NEOs are required. See Joint Pub 3-07.51 for more information.

F. PEACE OPERATIONS

This term encompasses three general areas: diplomatic, traditional peacekeeping, and forceful military actions. Therefore, it may be helpful to view these types of operations with only three terms: peacemaking (diplomatic actions), peacekeeping (noncombat military operations), and peace enforcement

(coercive use of military force). Peace operations are not typically conducted within the territory of the United States. For more information, see Joint Pub 3-07.3.

The UN has been the most frequent sponsor of classical peacekeeping activities; however, regional organizations such as the Organization of American States, the Organization of African Unity, and the Arab League have also acted in similar fashion to prevent, halt, or contain conflict in their respective regions. The objective of peace operations is to achieve a peaceful settlement among belligerent parties, primarily through diplomatic action. Military operations may be necessary if diplomatic actions are insufficient or inappropriate.

G. SUPPORT TO INSURGENCIES

Insurgencies attempt to exploit actual or perceived governmental weaknesses, such as failure to maintain law and order; inability to respond adequately to disasters; overreaction to civil disturbances; or failure to meet economic, political, ethnic, or social expectations.

Organizational structures for US support to insurgencies can be overt, low visibility, clandestine, or covert. Each support program is conducted as a special activity within the meaning of section 3.4(h) of Executive Order 12333, 4 December 1981, "US Intelligence Activities," and is subject to approval by the US Congress.

The US military principally trains and advises insurgent forces in unconventional warfare tactics, techniques, and procedures. These actions should be integrated with the programs of the other instruments of national power. [Ref. 17:pp. V-9-V-16]

LIST OF REFERENCES

1. Jowitt, Ken. "New World Disorder", lecture given at the Naval Postgraduate School, Monterey, California, 18 January 94.

2. Lewis, William H. , and Sewall, John O.B., "United Nations Peacekeeping: Ends versus Means," pp. 48-57, *Joint Forces Quarterly*, Summer 1993.

3. Joint Chiefs of Staff, Joint Pub 2-0, *Joint Doctrine for Intelligence Support to Operations,* 12 October, 1993.

4. Snow, Donald M., *Peacekeeping, Peacemaking and Peace-Enforcement: The US Role in the New International Order*, Strategic Studies Institute, US Army War College, Carlisle Barracks, Pennsylvania, February 1993.

5. US Army Command and General Staff College, Department of Joint and Combined Operations, *Joint Command, Control, Communications, and Intelligence Number: Sub course 560/2*, Fort Leavenworth, Kansas, June 1991.

6. Allard, C. Kenneth, LTCOL USA, *Command, Control, and the Common Defense,* Yale University Press, New Haven and London, 1990.

7. Orr, George E., *Combat Operations C3I: Fundamentals and Interactions,* Air University Press, Maxwell Air Force Base, Alabama. July 1983.

8. Joint Chiefs of Staff, JCS Pub 1-02, *Department of Defense Dictionary of Military and Associated Terms*, 01 December, 1989.

9. Johnson, F.C., "Command and Control/Decision-Making Discussion," paper presented at CC4003 class, Naval Postgraduate School, Monterey, California, 26 January, 1994.

10. US Army Command and General Staff College, Department of Joint and Combined Operations, "Appendix to Lesson 1: Principles of Command and Control," *Joint Command, Control, Communications, and Intelligence Number: Sub course 560/2*, Fort Leavenworth, Kansas, June 1991.

11. Jones, Carl R., and others, Volume 156, *Towards a Science of Command, Control, and Communications,* p. 167-180, American Institute of Aeronautics and Astronautics, Inc.. 1993.

12. *American Heritage Dictionary*, as contained on Microsoft Word for Windows & Bookshelf Compact Disc, Microsoft Corporation, 1992-93.

13. Headquarters Departments of the Army and the Air Force, Field Manual 100-20, Air Force Pamphlet 3-20, *Military Operations in Low Intensity Conflict,* 05 December, 1990.

14. Johnson, Fredrick C. and Painter, Floyd C., "The Integration of Warfare Support Functions," *The C3I Handbook*. Edition 3, EW Communications, Inc., Palo Alto, CA. 1988.

15. Richelson, Jeffrey T., *The US Intelligence Community*, Ballinger Publishing Company, 1989.

16. Joint Chiefs of Staff, Joint Pub 6-0, *Doctrine for Command, Control, Communications, and Computer (C4) Systems Support to Joint Operations,* 03 June 1992.

17. Joint Chiefs of Staff, Joint Pub 3-0, *Doctrine for Joint Operations*, 09 September 1993.

18. Headquarters, Department of the Army, Field Manual 100-5, *Operations,* 14 June 1993.

19. Headquarters, Department of the Army, Training and Doctrine Command, Field Manual 100-23, *Peace Operations,* DRAFT, date unknown.

20. Anderson, Gary, Colonel, USMC, "UNISOM II: Not Failure, Not Success," Paper presented at the "Beyond Traditional Peacekeeping," conference, Naval War College, Newport, Rhode Island., 23-25 February, 1994.

21. Clausewitz, Carl von, *On War,* Pelican Books, Inc., Baltimore, Maryland, 1968.

22. Interview between H.C. Stackpole, III, Lieutenant General, USMC, Commanding General, Marine Forces Pacific, Camp H.M. Smith, Hawaii, and the author, 7-8 December, 1993.

23. Frank Crigler, :"The Peace-Enforcement Dilemma," *Joint Forces Quarterly,* pp. 66-67, Autumn 1993.

24. Cavanaugh, John P. LTC USA. *Operation Provide Comfort: A Model for Future NATO Operations*, Monograph, School of Advanced Military Studies, US Army Command and General Staff College, Fort Leavenworth, Kansas, 1992.

25. Dixon, Anne M.,"The What's and Why's of Coalitions," *Joint Forces Quarterly*, pp. 26-28, Winter 1993-94.

26. Oakley, Robert B., "An Envoy's Perspective," Joint Forces Quarterly, Autumn 1993, pp. 44-55.

27. Marshall, William J. III, Commander, USN, *By Separate Action: Humanitarian Assistance,* Naval War College, Newport, Rhode Island, 11 March, 1993.

28. Stackpole, Henry C. III, Lieutenant General USMC and Chase, Eric L. Colonel USMC, "Humanitarian Intervention and Disaster Relief: Protecting Military Strength Abroad to Save Lives," *Marine Corps Gazette,* pp. 16-20, February 1993.

29. Walczak, Alexander M., Colonel, USA, *Conflict Termination-Transitioning from Warrior to Constable- A Primer*, US Army War College, Carlisle Barracks, Pennsylvania, 08 June, 1992.

30. Linn, Thomas Lieutenant Colonel, USMC, "The Cutting Edge of Unified Actions," *Joint Forces Quarterly, pp. 34-39,* Winter 1993-94.

31. Matthews, William, "New US Peacekeeping Policy Shrinks Arena," *Navy Times,* p. 11, February 28, 1994.

32. Sneed, LeVal W.,*The National Level Information Architecture of the United States*, Master's Thesis, Naval Postgraduate School, Monterey, California, June 1993.

33. Belfield, F.D., Flt. Lt. RAF, *Operation Restore Hope After Action Report*, Marine Aviation Weapons and Tactics Squadron One, Marine Corps Air Station Yuma, Arizona, 26 April, 1993.

34. RisCassi, Robert W., General, USA "Principles for Coalition Warfare," *Joint Forces Quarterly*, pp. 58-71, Summer 1993.

35. Builder, Carl. H., *The Masks of War: American Military Styles in Strategy and Analysis,*Johns Hopkins University Press, Baltimore and London, 1989.

36. Trainor, Bernard E., Lieutenant General, USMC (Ret.),"Jointness, Service Culture, and the Gulf War," *Joint Force Quarterly,* pp. 71-74, Winter 1993-94.

37. Armed Forces Staff College, AFSC Pub 1, *The Joint Staff Officers Guide 1991,* Government Printing Office, Washington, D.C., 1991.

38. United States Pacific Command, USCINCPAC BATTLE STAFF TRAINING, Slide Presentation, Date Unknown.

39. McCarthy, James P., General, USAF, "Commanding Joint and Coalition Operations," *Naval War College Review*, pp. 9-21, Winter 1993.

40. Hoar, Joseph P., General, USMC, "A CINC's Perspective," *Joint Forces Quarterly*, pp. 56-63, Autumn 1993.

41. Adams, Paul D., Major, USMC, "Rules of Engagement: The Peacekeeper's Friend or Foe?" *Marine Corps Gazette*, pp. 21-23, October 1993.

42. Smith, William D., Admiral, USN, "Peacemaking From the Sea," *US. Naval Institute Proceedings*, pp. 25-28, August 1993.

43. Goff, Donald G., Colonel, USA, *Building Coalitions for Humanitarian Operations: Operation Provide Comfort.* US Army War College, Carlisle Barracks, Pennsylvania, 08 June 1992.

44. Harrell, Margaret Cecchine and Howe, Robert, "Military Issues in Multinational Operations," paper presented at the "Beyond Traditional Peacekeeping," conference, Naval War College, Newport, Rhode Island, 23-25 February 1994.

45. United States Pacific Command, USCINCPACINST 3020.II *Organization and Administration of USCINCPAC Deployable Joint Task Force Augmentation Cell,* Camp H.M. Smith, Hawaii, 17 June 1992.

46. Helton, Emory R., Major, USA, *Humanitarian Assistance- A Good Way to Lead the World*, Naval War College, Newport, Rhode Island, 22 February 1993.

47. Anderson, Gary, Lieutenant Colonel, USMC, *Operation SEA ANGEL: A Retrospective on the 1991 Humanitarian Relief Operation in Bangladesh*. Center for Naval Warfare Studies, Naval War College, Newport Rhode Island, 15 January 1992.

48. United States European Command, *Operation Provide Comfort After Action Report,*29 January 1992.

49. Pudas, Terry J., Captain, USN, "Preparing Future Coalition Commanders," *Joint Forces Quarterly,* pp. 40-46, Winter 1993-94.

50. Stares, Paul B., *Command Performance: The Neglected Dimension of European Security*, The Brookings Institution, Washington, D.C. 1991, p. 19.

51. Busey, James B. IV, Admiral , USN(Ret.), "Facing Regional Challenges Boosts Intelligence Urgency," *Signal*, p. 11, August 1993.

52. Interview between Pete Hull, Commander, USN, Intelligence Curriculum Academic Associate, Department of National Security Affairs, Naval Postgraduate School, Monterey, California, and the author, 11 January, 1994.

53. Hone, Thomas C., "Combine Strategy and Intelligence," *US Naval Institute Proceedings*, pp. 60-61, June 1993.

54. Rhodri Jeffreys-Jones, *The CIA and American Democracy,* Yale University Press, 1989.

55. Steele, Robert D., "Open Source Intelligence Clarifies Global Threats," *SIGNAL,* pp. 65-67, September 1992.

56. Steele, Robert D., "Leaner Marine Corps Faces Meaner Global Challenge," *SIGNAL,* pp. 119-122, June 1992.

57. Interview between Keith Maxfield, Colonel, USMC, Assistant Chief of Staff, G-2, Marine Forces Pacific, Camp H.M. Smith, Hawaii, and the author, 9 December, 1993.

58. Steele, Robert D., "C^4I: The New Linchpin," **Proceedings**, p. 35-40, July 1992.

59. Joint Uniform Lessons Learned Long Report (JULLS), Report Number 80276-24224, *Weather Support*, 24th Marine Expeditionary Unit, 28 July 1991.

60. Joint Uniform Lessons Learned Long Report (JULLS), Report Number 80277-34036, *Ground and Air Recon,* 24th Marine Expeditionary Unit, 28 July 1991.

61. Joint Uniform Lessons Learned Long Report (JULLS), Report Number 80274-12804, *Intelligence Collection Operation,* 24th Marine Expeditionary Unit, 28 July 1991.

62. Joint Uniform Lessons Learned Long Report (JULLS), Report Number 61553-56465, *Security Classification Guidance for Crisis Actions*, USEUCOM, 24 June 1991.

63. Joint Chiefs of Staff, Joint Pub 6-05.1, *Employment of Joint Tactical Communications Systems,* 24 April 1992.

64. Tegen, Carl M., Major, USA. *Joint Communications Doctrine at the Operational Level,* Naval War College, Newport, Rhode Island, 19 June 1993.

65. I Marine Expeditionary Force, Camp Pendleton, California, Assistant Chief of Staff, J6 memorandum to Assistant Chief of Staff, J3, Subject: Response to Marine Corps Combat Development Command , Fact Finding Questionnaire regarding OPERATION RESTORE HOPE, 26 January 1993.

66. Interview between P.F. Rouques, Colonel, USMC, Assistant Chief of Staff G-6, Marine Forces Pacific, Camp H.M.Smith, Hawaii, and the author, 07 December, 1993.

67. Interview between Major Bowden, USMC, Operations Officer, G-6 Marine Forces Pacific, Camp H.M. Smith, Hawaii, and the author, 09 December 1993.

68. Commanding General, Commander Marine Forces Somalia, Assistant Chief of Staff G-6, *Systems Engineering/Chronology for Operation Restore Hope,* 10 September 1993.

69. McArthur, Heinz M., Major, USMC, *WWMCCS in the Marine Corps: Time for Changes,* Marine Corps Command and Staff College, Quantico Virginia, 1992.

70. Interview between Dave Beeman, Lieutenant Colonel USMC, G-5 Marine Forces Pacific, and the author, 08 December 93

71. Sovereign, M. Bailey, and W. Kemple, *Application of the Modular Command and Control Structure (MCES) to Marine Corps SINCGARS Allocation,* Naval Postgraduate School Report NPSOR-91-023, August 1991.

72. Anderson, Gary, Lieutenant Colonel, USMC, "Unity Rewarded in Typhoon Rescue," *Marine Corps Gazette,* p. 90, November 1991.

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